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PERCEPTION

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PREFACE

THIS book is the successor of a dissertation submitted for the B.Sc. Degree in Oxford in 1922 ; but since then it has been entirely re-cast, so that little, if anything of the original survives. I need hardly say that it does not profess to cover the whole of the subject suggested by the title. It is concerned in the main with only two points, the nature of perceptual consciousness and the relation of sense-data to the ordinary macroscopic objects of daily life, such as tables and rocks. On both those points what may be called a *causal* theory has long been prevalent. It has been held that sense-data are related to material things merely by a relation of indirect causal dependence (sometimes resemblance has been added) ; and that perceptual consciousness either is, or at any rate ought to be, an argument from effects to causes. This theory has of course been attacked, almost from its beginning, by a long and illustrious series of philosophers, from Berkeley to Mr. Bertrand Russell (in his middle period) ; and its hold upon educated opinion has been further weakened of late years by the spread of the 'descriptive' view of Science. But it is still so widely held, both by philosophers and non-philosophers, and indeed has so many perfectly legitimate attractions, that one more attempt to replace it by something less violently opposed to Common Sense may not be a waste of time. At any rate, I am convinced that the theory is radically mistaken, and my main aim in this book, whether worth achieving or not, is to present a constructive and detailed alternative to it. If in so doing I seem to have inclined too much to the opposite or Phenomenalistic extreme, I can only plead that at least this is by far the lesser evil.

The main arrangement of the book is as follows. Chapter I is chiefly introductory, and seeks to establish the reality of sensing and of sense-data. In chapter II, after stating the main problem, which is arrived at by considering the various meanings of the word 'perceive', I proceed at once to expound

and discuss a number of answers to it which I hold to be erroneous: first Naïve Realism, both in its pure form, and in its more subtle modern modifications (chapters II and III); and then the Causal Theory (chapter IV) which I have stated as sympathetically as I can, and in more detail than is customary, in order to give it a fair run for its money. Chapter V is a sort of interlude on the nature of sense-data, or as it is sometimes called, their ontological status. In chapters VI and VII I have tried to give a description of our ordinary everyday perceptual consciousness (this must be sharply distinguished from the sensing by which it is accompanied and conditioned). I have tried to show that it has its own criteria of validity, and that no external ones are either necessary or possible. In this connexion I wish to lay particular stress upon the fact that perceptual consciousness has two distinct grades, which I have called *perceptual acceptance* and *perceptual assurance*: the difference between them has not, I think, been always recognized. The subsequent chapters (VIII to X) are devoted to the relation between sense-data and material things, which following Professor G. E. Moore I have called the relation of *belonging to*. This has involved me in a complex and I fear somewhat tedious investigation of the relation of sense-data to one another, the chief aim of which is to set clearly before the reader's mind the notion of a *family* of sense-data. Throughout this part of the book, as will be obvious to the judicious student, I am very greatly indebted to the writings of Professor G. E. Moore, Mr. Bertrand Russell, and Dr. C. D. Broad: but indeed their influence extends, in an only slightly diminished degree, to the earlier chapters as well. In these later chapters, and to some extent in the earlier ones also, I have ventured to introduce a certain number of new technical terms. This may distress some readers, but I think it should assist most, for at least circumlocution is avoided and criticism facilitated. I have done my best to state clearly what they mean, and indeed in most cases their meaning is obvious. Where they are inadequate perhaps they may stimulate some one to produce better ones. In any case, nobody is obliged to use them if he does not want to.

In conclusion I am bound to make grateful acknowledgments to friends, teachers and colleagues, senior and junior, both in Oxford and in Cambridge, to whom I owe both my interest in this subject and my power to pursue it: in Oxford, to Mr. H. W. B. Joseph, Professor H. A. Prichard and Professor

J. A. Smith, and among my own contemporaries to Mr. Gilbert Ryle, Mr. J. D. Mabbott and Dr. A. C. Ewing ; and in Cambridge to Professor G. E. Moore and Dr. C. D. Broad. I have already mentioned my debt to the writings of Dr. Moore and Dr. Broad, which are familiar to all English-speaking students of Perception ; but thanks to their own kindness, and the generous hospitality of Trinity College, Cambridge, I have also had the privilege of attending their lectures, and the still greater privilege of private discussion with them. I wish I could think that I had made due use of these advantages.

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ston? Or is there only one sort of intuitive apprehension, and does the difference between (say) sensing, remembering and the contemplation of mental images lie only in the nature of the apprehensa? The question is difficult, nor does it seem very important. Perhaps we may say that there are two sorts of intuitive apprehension, one directed upon *facts*, e.g. the fact that I am puzzled or was puzzled, or again the fact that $3 + 2 = 4$, or that courage is good: another directed upon *particular existents*, e.g. this colour-patch or this noise or that visual image, or again upon this feeling of disgust and that act of wondering. The first is apprehension *that*, the second is apprehension *of*. The term *acquaintance* is properly reserved for the second, and we shall so use it in future.

Are there several different sorts of acquaintance, e.g. sensing, sense-consciousness, and contemplation of mental images? I cannot see that there are. The difference seems to be wholly on the side of the data. If so, *a fortiori* there are not different kinds of sensing. Visual sensing will simply be the acquaintance with colour-patches, auditory sensing the acquaintance with sounds, and so on; the acquaintance being the same in each case. No doubt there will be different kinds of *sense-datum-genesis*, just as there are different kinds of sense-data. And if any one likes to use the term 'visual sensing'¹ to mean the genesis of colour-patches and 'auditory sensing' to mean the genesis of noises, he may, and of course he is then entitled to say that there *are* different kinds of sensing. But this has not the slightest tendency to show that there are different kinds of sensing in *our* sense of the word (which is also the usual one).

If the term sense-datum is taken in the strictly limited meaning that we have given it, I do not see how any one can doubt that there are sense-data. Yet it is certain that many philosophers do profess to doubt this and even to deny it. Indeed the sense-datum has come in for a good many hard words. It has been compared to the Wild Goose which we vainly chase: or again it is the Will o' the Wisp which lures the Realist further and further from Reality. According to an

¹ The substitution of 'seeing' for visual sensing, 'hearing' for auditory sensing, etc., would make confusion even worse confounded. For in the ordinary sense of the word *see*, what I see is not a colour-patch, but a material thing, e.g. a table or a tomato. Likewise *hear*, *smell*, etc., are in ordinary usage ambiguous. I hear the train, or I hear a noise. I smell the rose, or I smell a smell.

eminent Idealist philosopher,¹ our modern interest in the sense-datum is just one more manifestation (among so many others) of the degeneracy of an age which prefers the childish, the easy, and the barbarous to the laborious achievement of Intelligence and Civilization. Or again—a charge hardly compatible with this—it is derided as the invention of sophisticated philosophers, as no datum at all. Nor are our opponents content with brilliant metaphors. They have plausible arguments to put forward, and these we must try to answer. It is obvious that we cannot do more than this. It is impossible from the nature of the case to *prove* that there are sense-data or data of any other sort. The utmost we can do is to remove misunderstandings which prevent people from searching for them and from acknowledging them when found. After that, we can only appeal to every man's own consciousness.

The doctrine that there are no sense-data may take two forms, a wider and a narrower, which are not always clearly separated.

1. It is said that the very notion of givenness is an absurd and self-contradictory notion, that from the nature of the case nothing can ever be given at all. This is the most radical criticism that we have to meet. It may be called the *A priori* Thesis.

2. There is also what may be called the Empirical Thesis. This does not say that there is an absurdity in the very notion of givenness. It only says that we can never in fact find anything which is given. And it concludes that either there is no Given at all, or if there is any, it is found only in the experience of new-born children, idiots, and people falling into or just coming out of fainting fits: in which case (it is urged) the Given is clearly of no importance to the philosopher, for it is quite beyond the reach of investigation, and therefore cannot be appealed to as evidence for anything.

Either of these theses if established would be very damaging. The *A priori* Thesis is the most radical, but also the easier to answer. The Empirical Thesis is the really difficult one to meet, and we shall have to make some concessions to it. Nevertheless, the arguments by which it is ordinarily supported are open to very grave objections.

The 'A priori' Thesis. The main argument in favour of this may be summed up as follows:

¹ Professor H. J. Paton, *The Idea of the Self*. University of California Publications in Philosophy, vol. 8, pp. 76-7

It is impossible to apprehend something without apprehending some at least of its qualities and relations. In the language of Cambridge logicians, what we apprehend is always a *fact*—something of the form 'that A is B' or 'the B-ness of A'. You cannot apprehend just A. For instance, you cannot apprehend a round red patch without apprehending that it is red and round and has certain spatial relations. But if we apprehend that it has these qualities and relations, we are not passively 'receiving' or (as it were) swallowing; we are actively thinking—judging or classifying—and it is impossible to do less than this.

To this I answer, it is very likely true, but it is irrelevant. The argument only proves that nothing stands *merely* in the relation of givenness to the mind, without also standing in other relations: i.e. that what is given is always also 'thought about' in some sense or other of that ambiguous phrase. But this does not have the slightest tendency to prove that *nothing is given at all*. The fact that A and B are constantly conjoined, or even necessarily connected, does not have the slightest tendency to prove that A does not exist.¹ How could it, since it itself presupposes the existence of A? That arguments of this sort should be so frequently used, and should be thought so conclusive, is one of the curiosities of philosophical controversy.

Secondly, we may attack the enemy on his own ground and ask him how we can think without having something to think about. This *subject* or *subject-matter* about which we think must be somehow brought before the mind, if we are to think about it, and it cannot always be brought there by previous thinking, or we should have an infinite regress. This means that something must be *given*. And sensing is one of the ways (I do not say the only one) in which subject-matters for thought are given to us. No doubt it is important to insist that this intuitive 'receiving' of a datum is never more than an element in our total state of mind.² But still it *is* an element, and an essential one.

The Empirical Thesis. This maintains that it is in fact impossible to discover any data. For if we try to point to an

¹ A stands here for 'Givenness' and B for 'thought-of-ness'. The argument is the one commonly used against what is called *vicious abstraction*. Sometimes the conclusion is not that A does not exist but that A is identical with B: but here again it is presupposed in the premises that they are different—else how could they be necessarily connected?

² Cf. Discussion of Perceptual Acceptance, below, Ch. VI.

instance, it is said, we shall have to confess that the so-called datum is not really given at all, but is the product of interpretation.

This doctrine is put forward both in the interests of Subjective Idealism, which holds that each mind lives in a private world of its own, and in the interests of that Objective or Rationalistic Idealism which holds that the world is entirely constructed by 'Thought', or by 'Mind' with a capital M. But it may be suspected that sometimes the one party uses arguments which are only appropriate to the other.

We must begin by protesting with Professor G. E. Moore against the word 'interpretation', which is used to cover several quite different processes and is at best only a metaphor. For instance, it may mean either *association of ideas*, or some form of *thinking*. We shall begin with the first.

Effects of Association. We can easily find cases where the Given seems to have been contaminated, as it were, by the effects of association. Thus it would be said that Visual Depth beyond a pretty short range is plainly not given, but is due to the revival, by association, of the traces of past kinaesthetic and tactual experience. Or again a distant snowy peak looks cold, but is it not obvious that its coldness cannot be given? The sounds of a foreign language, say Italian, sound quite different when I have learned to speak the language myself. They then fall apart, as it were, into words and word-groups, which they never did before. (At first I heard just one continuous sound.) This is due to the traces of the kinaesthetic experiences experienced in speaking the language oneself, and further to one's newly-acquired knowledge of what the words mean—for this knowledge too has left its 'traces'. But neither the kinaestheta nor the meanings can be *heard*. Both are 'read into' what we hear. Proof-reading and Psychic Blindness also provide instances. But here the effect of the traces is negative instead of positive. Instead of seeing what is not there, we fail to see what is there.

Objections to the Argument. Let us first take the argument on its own ground, without criticizing its premises. We must then answer that no doubt the facts are as stated, but they do not prove what is wanted. Indeed, if anything, they prove the very opposite, viz. that there *are* data and that we know what they are.

1. If nothing whatever is given to me when I look at the mountain or hear the sounds, the phrase 'due to association'

loses all sense. Association is a relation, and if we speak of it, we imply that there are at least two terms to be associated : what is associated must be associated *with something*. When the mountain looks cold to me, the presence of the coldness to my mind is due to association. But with what is the coldness associated ? Obviously with the colour and shape. These then *are* given : *their* presence cannot be explained by association, for they are what the associated qualities join on to. And if, preferring another metaphor, you say that what I see is 'contaminated by' the traces of past experiences, or 'overlaid with' them : I answer, that where there is contamination there must be something which is contaminated, and where there is overlaying there must be something which is overlaid.

2. Is it not dangerous to specify *what* characteristics are due to association ? We are told 'What you see looks cold, distant and solid ; and obviously coldness, distance and solidity cannot be given to sight'. But how does the critic know that they are not given to sight ? The only answer must be : 'Because colour and two-dimensional shape are the only qualities that *are* given to sight'. But in that case there is after all a datum of sight, and the critic knows what it is.

3. Is it not dangerous to give a name to the associations, to speak of them, for instance, as *tactual* associations, *kinaesthetic* associations and the like ? For this presupposes that the associated characteristics, though not given now, have been given in the past. For instance, if you say that the apparent coldness and solidity of the seen mountain-peak are due to tactual associations, and therefore are not given to sight at this moment, you admit that they have been given to touch in the past. Otherwise what is the sense of using the word 'tactual' ? And even if, more wary, you merely say that the presence of these qualities is due just to the traces of past experience, we must press you to specify what kind of past experience. And you will be obliged to say, past *sense*-experience, and so you will have admitted that these qualities have been given in the past. Thus in order to prove that A *is* not given, one has to assume that B *has been* given.

So far we have been attacking the critics of the Given upon their own ground. And that ground is this. They begin by assuming that there is a distinction between 'the real given' or the given-as-it-is-in-itself on the one hand, and 'what the given seems to be' on the other. And they then argue that we cannot know what this given-as-it-is-in-itself is. That the argument

when we pursue it into detail is incoherent, and proves the very opposite of what it is supposed to prove, we have seen. We must now attack the initial assumption and point out :

4. That the distinction between the Given as it really is and what the Given seems to be¹ is altogether untenable. I scarcely know how to prove this. Is it not just obvious that if something seems to be given, it is given? For in the sphere of the given (as in that of pleasure and pain) what seems, is. Indeed we might go farther. We might say that the notion of seeming has no *application* to the given : and that, by the very definitions of 'seeming' and of 'given'. When A seems to be B, this really means that some mind unreflectively believes A to be B, or as we say 'takes' it to be B. Now if so, there must be some *evidence* upon which this taking is (however hastily and unreflectively) based. Thus if it seems to me to be raining, the evidence is that I hear a pitter-patter sound. This does not *seem* to be a pitter-patter sound ; it *is* one. And only because there *is* this sound can it seem to have a certain cause, viz. rain falling on the roof. And though the rain which there seems to be may not after all exist (for it may have been a shower of gravel or peas) the sound none the less exists, and does have a pitter-patter character. In short, the Given is by definition that which by being itself actual and intuitively apprehended, makes it possible for something else to seem to exist or to have a certain quality. Of course certain characteristics may be given which some philosopher thinks *ought not* to be given, e.g. solidity. So much the worse for him, that is all. He must have held a false theory of what is 'giveable'. If something is given, it is given, and we must just make the best of it. In a matter of this kind we cannot and will not accept the dictation of theorists.

To clinch my point, I will try to show how these errors may have arisen. They arise, I think, from a confusion between two standpoints or modes of investigation, (a) the physiological and (b) the immanent or phenomenological. The physiologist finds that many of the characteristics of the visual field are not due to the electromagnetic stimulus which affects the retina ; or even that none of its characteristics are entirely due to this. He therefore concludes that those characteristics are not given.

¹ In his *Philosophical Studies*, pp 243-7, Professor G. E. Moore has suggested that sense-data may seem to be what they are not. But he admits that this suggestion may be 'sheer nonsense'. (We shall have to refer to it again in another connexion. See p. 61, below.)

But we must point out that he is using the term 'given' in an utterly different sense from ours, a *causal* sense: he is using it to mean 'due to a physical stimulus external to the organism'—or, he may even be meaning that this stimulus *is* what is given.

But our standpoint is quite a different one. We are asking what is *given to consciousness*, or presented to the mind. We are not inquiring into the causes which may have led to its being given. Further (as has been shown already), our standpoint is the more fundamental one. For the physiologist's only evidence for believing that there is an organism, and physical stimuli affecting it, is derived from observation: that is, from the presentation to him—to him, not to his organism—of data in *our* sense of the word.

To sum up this rather intricate discussion:

1. It is true that what is given now to a certain mind depends to a surprisingly large extent upon what has been given to that mind in the past. But this, so far from disproving the existence either of present or of past data, asserts the existence of both, and enables us to describe their nature in a way we could not do before.

2. It is true that the facts concerning association adduced by our critics do make the causal explanation of the datum more complicated than one might expect. But to say that they prove that there are no data is to deny the very fact of association itself, which presupposes the existence of past data. And to say that the causal explanation of something is complicated is to assert, not to deny, the existence of the something to be explained.

3. The facts adduced do not hinder but help the Realist, that is, the man who wishes to use his data to gain knowledge or true belief about a Real which exists whether known and believed about or not. For the datum, it turns out, gives information not only about the present or the immediate past, but also—*via* earlier data—about the remote past. And the past is as much a part of the real world as the present, and quite as interesting. Moreover, the datum, we have found, gives information not merely about the non-mental, but also about the mind to which it is presented (e.g. a psycho-analyst can argue from the peculiarities of a man's data, say the hallucinations from which he suffers, to the existence of such and such a suppressed complex in the man's mind). Why should it be supposed that this would upset the Realist? The

mind is just as much a part of the Real, and just as fit an object for inquiry, as any mountain-top or teacup. And if we can collect information about it from the given, so much the better for us. We ought to be glad that the given is so full of a number of things, and accept the gift in the spirit in which it is offered.

So much for the first sense of the word 'interpretation'. There are however two others which we must consider. And first, interpretation may mean *thinking* of some kind or other. To interpret something may mean to apprehend (immediately or inferentially), or again to believe or opine or conjecture, that it has a certain characteristic. Thus if on hearing a certain noise we infer that it is the signal for dinner, we should be said to be interpreting what we hear. And even if one merely judges that it is a loud shrill sound, even this would be called interpretation by the philosophers with whom we are now concerned

I do not wish to maintain that the line between this intellectual sense of the word 'interpretation', and the associative sense of it which we discussed first, is altogether easy to draw. For it seems likely that association is on the one side more intellectual, on the other more plastic, and so to say less 'wooden' and external, than the traditional account of it would suggest. But that is a matter which we are not obliged for our present purposes to discuss. It is sufficient to point out that by interpretation people sometimes mean an 'unconscious' process, whose existence and nature can only be inferred from its results, and this is what we have already discussed under the name of association, whereas sometimes they mean an actually experienced activity, whose existence does not need to be inferred, because we are immediately aware of it in self-consciousness. It is this latter process which I have called the intellectual or 'thinking' sort of interpretation; and this is what we must now discuss.

The argument which we have to meet is as follows: Even if there be something which is given it is quite impossible for us to know it.¹ For if we attempt to describe any so-called datum, e.g. this view which I now see, the very act of describing alters it.² What we have at the end of the process is not the

¹ On this view the distinction between knowledge by acquaintance and knowledge about does not arise. Indeed the whole contention is that there is no acquaintance.

² The view that the describing alters not it but the *givenness* of it will be dealt with below, p. 17.

datum but a set of propositions, and the only relic of the datum is the term 'this' which stands as their subject. Thus every attempt to describe the given is bound to fail. But if we cannot describe it, i.e. say what characters it has, we obviously do not know it. It is just the hypothetical and inaccessible somewhat which was present before the process of describing began. And this applies even to the very simplest and naivest act of describing e.g. this is red, this is hard.

This argument, especially when adorned with a multitude of learned illustrations and expounded at many pages' length, is apt to seem very formidable. But we must point out that it rests on the assumption that *if I know or believe that something has a certain nature, it follows that it cannot possibly have the nature that I know or believe it to have* i.e. that from the fact that I know or believe that A is B, it follows that A cannot really be B. This assumption when openly and unmetaphorically stated is so extraordinary that it is difficult at first sight to understand how any one can accept it. But I think that on further reflection we can find certain facts, and certain confused conceptions of these facts, which do tend to make it plausible.

1. In the first place, the describing of something is an *active* process, something that we *do*. It is no wonder that Idealist philosophers speak in this connexion of 'the work' of thought, for in any cases but the simplest, the describing of what we see or hear is exceedingly difficult. An indefinitely large amount of extraneous knowledge may be involved in it. The greatest concentration of attention, the most happy and illuminating facility in recalling appropriate parallels, may well be necessary. Any one can, indeed, grasp that this is a black cross on a white ground; but it needs a Conrad to describe the data presented to the voyager in the China seas, and all the labours of all the great painters scarcely suffice to enable us to comprehend the pattern of the prospect which we can see from our own front doors.

In face of such efforts as these, it may be asked, what becomes of our Given? Can it really be the same at the end of this work as it was at the beginning? To say that it is completely unaffected is surely to say that the *work* has had no result. Nor can we draw a line anywhere between the simple statement 'This is a black cross on a white ground' and the elaborate, subtle, tortuous passage (perhaps pages long) of the novelist or the traveller. If the second transforms the datum into

something which is not a datum at all, so must the first. The datum-as-it-is-in-itself will be the unknowable limit of the series, which we approach more closely as our description becomes simpler and simpler, but never actually reach.—Or will it even be that? For at which end of the series do we come nearest to the datum as it really is? Does a bovine *naïveté* really bring us nearer to it than subtilty and sophistication?—especially when we remember that *naïveté* itself is often a most laborious achievement, which only the most sophisticated can attain to. It seems impossible to say. In short, the pursuit of the datum in itself seems to be a perfect wild-goose chase. We do not even know where we are to look for it, or when in our blundering attempts we are beginning (as children say) to get 'warm'.

To all this kind of argumentation we must firmly answer that it rests upon too narrow a notion of activity. Describing is a form of thinking, and thinking is an activity, often a very difficult one indeed. But it does not follow that it *alters* the thing about which we think. Practical activity does alter the thing upon which we act. For instance, the activity of walking alters the position and state of the walker's body: and the activity of beating some one alters the man who is beaten. But intellectual activity does not alter that upon which it is directed. If it alters anything, it alters only one's own mind, causing it to pass (say) from a state of uncertainty to a state of certainty, or from confusion to clarity.¹ Indeed that is the obvious difference between intellectual and practical activity. But though obvious, it is concealed from people for the following reasons. First, intellectual activity, though it does not itself alter the object, may lead to practical activity which does. If I had not understood that this was a wasp, I should not have hit it. Again, intellectual activity is, as it were, included in practical activity as an essential element. We 'control' our action by recognition of the circumstances, by the thought of a plan or principle which we are seeking to realize in or by the action, and by the apprehension of certain alternative ways of realizing it. There is no such thing as unintelligent action. *Das Thun ist auch Denken*. Further, even in the most purely theoretical activity we must attend, and attending seems to be a kind of willing. But these facts, though important, do not have the faintest tendency to show

¹ I understand that some of the schoolmen said that in the activity of thinking the intellect *perfects itself*.

that intellectual activity and practical activity are identical, or even alike. As we have seen before, from the fact that A and B are connected, however intimately, we cannot infer that A is identical with B, still less that A does not exist.

So much for the first confusion which leads philosophers to think that if I know or believe that A is B, it follows that A cannot really be B.

2. The second confusion arises from the use of such words as *analysis*. When we describe something, it is natural to say that we are analysing it or 'breaking it up'. And the next step is, to assimilate this intellectual analysis to chemical analysis or anatomical dissection. It is held that just as dissection destroys a living organism, so intellectual analysis destroys that which is analysed, and substitutes something else in its place: 'we murder to dissect.' For instance, it substitutes for an organic whole a set of parts externally related by a mere 'and' relation, or replaces a concrete individual by a set of universals or concepts. And accordingly since all thought may be regarded as analysis, we are forbidden to think, or warned that the thinkable is very far from being the real.

But is this metaphor to impose on us for ever? Is it not plain that intellectual analysis is utterly different from dissection? In intellectual analysis, I do not *do* anything to the object before me. I *find* relations within it. I *discover* that it possesses various characteristics—say redness and roundness—and I apprehend certain differences between those characteristics. But those relations and characteristics were there before I discovered them. The only change that has occurred is a change in myself. I was ignorant, and now I know. Nor does the fact that in order to find them I must often *compare* the present given with other data given in the past at all affect the matter. Comparison does not alter the things compared. It is merely the *detection of a likeness*. The likeness may be what is called far-fetched—in the descriptive writing of Conrad (for instance) it often is. But it is there all the same: and when we call it far-fetched, we only mean that most of us would not have succeeded in discovering it.

Before leaving this part of the subject, we may observe that all this applies to 'synthesis' also. What is called 'synthesis' or sometimes 'construction' by philosophers is not really a putting together of entities originally separated: it is the detection or discovery of an objective complex which has been there all along. The discovery is metaphorically called a

synthesis, because it comes about in and by means of an active process of comparison.

3. The third confusion in the minds of those who hold that thought destroys or transforms the given which is thought about has to do with *attention*. Mr. Bradley somewhere asks 'Does attention change its object?' Like another famous doubter, he does not stay for an answer. But I think he means to suggest that attention does alter its object. And I think that many of the critics of the Given have tacitly adopted the suggestion, though without putting the issue in this plain way. It is thought that as we attend to something, this something becomes more and more 'clear', and at the same time more and more complex. It starts by being a mere 'something or other' and it ends by being (say) a Gothic pinnacle, or a group of oak-trees arranged in a quincunx.

This, I suppose, is the doctrine. Yet when plainly stated it is so extraordinary that it is hard to see how any one can have the audacity to hold it. To alter something is to cause a change in it. But the kind of change which is supposed to occur in the object of attention is altogether fantastic. In a genuine change the object passes from the possession of one determinate character to the possession of another at the same level of determinateness. Thus if it changes shape it may pass from circular to elliptical: if colour, from peacock green to turquoise blue. But the change which attention is supposed to cause is not of this sort at all. It is a passage *from the possession of a generic character to the possession of a specific one*, and from that to the possession of one still more specific: or again it is a passage from possession of an indeterminate character to the possession of more and more determinate ones. Thus in regard to shape, the thing (as I attend to it) will first have just shape in general, then rectilinear shape in general, then it will become triangular, and lastly perhaps it will be an equilateral triangle. In regard to colour, it will first have colouredness in general, then it will be green, then bluish green, and finally peacock green.

Now is it not plain as day that this is not change at all? Change is the passage from one characteristic to another characteristic of *equal determinateness*. But this so-called change is in another dimension altogether: it is from the less determinate to the more determinate. Is it not obvious that the change—the growing determinateness—is simply in our mode of apprehension and not in the thing apprehended?

It is we who apprehend more and more determinately the always fully determinate character which the thing all along possessed.

Further, the doctrine involves another absurdity: that of supposing that an entity can exist with only generic or indeterminate qualities, e.g. that a colour-patch can exist which is just coloured and is neither red nor green, blue nor yellow. Such would be the fate of all those unfortunate entities which do not happen to get attended to.

So much for the confusions which lead philosophers to think that the attempt to know anything about the Given must alter it, and to conclude that if anything is given at all, it is unknowable. We have tried to show that the intellectual activities of describing, comparing, etc., do not alter that which is 'analysed' or described, but merely reveal its nature and its relation to other things in the world.

It may however be suggested that though that which is given is not altered by the attempt to know about it, yet its *givenness* is destroyed by that attempt, so that although a certain red patch after being described is the same entity as it was before, yet it is not the same datum—for it is no longer a datum at all, but has become an 'intellectum' instead. Thus any alleged knowledge about data would really be a knowledge about ex-data, and we could still say that the datum *qua datum* is unknowable—unknowable in the sense in which a bachelor is incapable of being a husband.

It is plain that this supposed alteration is different from the former one, which we have already dismissed. The alteration of A is one thing, the alteration of A's relation to the mind is another.

Now we must admit that if a datum A is reflected upon and described, it is no longer *merely* a datum. For the sake of argument we will even go further, and allow that everything which can be said to be given to a mind is also 'judged about' by that mind, i.e. recognized to have certain qualities and relations, at any rate certain very general ones. But from the fact that something is no longer (and perhaps never was) a datum merely, we cannot conclude that it is not a datum at all. Again from the fact that we recognize (and describe) something as red and round, we can conclude that we are not *merely* acquainted with it: but that we are *not* acquainted with it—this by no means follows. Indeed it is difficult, to say the

least, to understand how we could describe colour-patches or noises or tactual pressures, unless they were somehow there before us to be described, or in general how we could recognize anything as so-and-so unless we were acquainted with it. Certainly the fact that we can describe and recognize it will never prove that we are *not* acquainted with it! We must conclude then that the given is still given, however much we know about it. Knowledge-about is the usual, perhaps the inevitable, companion of acquaintance, but it is not its executioner.

We may sum up this discussion as follows. When I am in the situation which is described as seeing something, touching something, hearing something, etc., it is certain in each case that a colour-patch, or a pressure, or a noise exists at that moment and that I am acquainted with this colour-patch, pressure or noise. Such entities are called sense-data, and the acquaintance with them is conveniently called sensing; but it differs from other instances of acquaintance only in its object, not in its nature, and it has no species. The usual arguments against the reality and against the knowability of sense-data break down on examination. They only prove at most that there is no sense-datum which is not the object of other sorts of consciousness besides sensing, and that the causes of most sense-data are more complicated than might have been expected. and in these conclusions there is nothing to disturb us.

In conclusion we may point out that the admission that there are sense-data is not a very large one; it commits us to very little. It may be worth while to mention explicitly a number of things which we are *not* committed to.

1. We are not committed to the view that sense-data *persist*¹ through the intervals when they are not being sensed. We have only to admit that they *exist* at the times when they are being sensed.

2. We are not committed to the view that several minds can be acquainted with the *same* sense-datum. We have only to admit that every mind is acquainted with *some* sense-data from time to time.

3. We are not committed to any view about what is called 'the status' of sense-data in the Universe, either as regards the

¹ Or more strictly, that there are persistent *sensibilia* which become sense-data temporarily when they are sensed. Cf. Mr. Bertrand Russell's *Mysticism and Logic*, p. 148.

category they fall under, or as regards their relations with other types of existent entities. They may be events, or substances, or states of substances. They may be physical; i.e. they may be parts of or events in material objects such as chairs and tables or (in another theory) brains. They may be mental, as Berkeley and many others have held. They may be neither mental nor physical.

4. We are not committed to any view about their *origin*. They may originate as a result of processes in material objects, or of mental processes, or of both. Or again, it may be that the boot is on the other leg: it may be that they are the ultimate constituents of the Universe, and material things (perhaps minds as well) may be just collections of them; in which case they 'just are', and have no origin and no explanation, since everything else is explained by reference to them.

Thus the term *sense-datum* is meant to be a *neutral term*. The use of it does not imply the acceptance of any particular theory. The term is meant to stand for something whose existence is indubitable (however fleeting), something from which all theories of perception ought to start, however much they may diverge later.

And I think that all past theories have in fact started with *sense-data*. The Ancients and the Schoolmen called them *sensible species*. Locke and Berkeley called them *ideas of sensation*, Hume *impressions*, Kant *Vorstellungen*. In the nineteenth century they were usually known as *sensations*, and people spoke of visual and auditory sensations when they meant colour-patches and noises, while many contemporary writers, following Dr C. D. Broad, have preferred to call them *sensa*.

All these terms have the defect of begging questions. If we speak of *sensible species* we assume that *sense-data* are physical, a sort of effluences flying off the external objects into our sense-organs. If we use terms like *idea*, *impression*, and *sensation* we commit ourselves to the view that *sense-data* are mental events. *Sensum* is very much the best. But it is generally used to mean a 'third kind' of entity, neither mental nor physical. And although we are not at present in a position to assert that *sense-data* are physical or that they are mental, neither are we in a position to deny either of these alternatives. (Thus '*sense-data* are *sensa*' is not a tautology, but a synthetic proposition.)

An incidental virtue of the term *sense-datum* is that it enables us to give a brief and intelligible account of the traditional theories concerning perception and the external world, and so to make use of the work of our predecessors without wasting time in tedious historico-lexicographical investigations.

CHAPTER II

NAÏVE REALISM AND THE ARGUMENT FROM ILLUSION

IT is now clear that all our beliefs about the material world are based directly or indirectly upon the sensing of visual and tactual sense-data, meaning by 'based' that if we were not from time to time acquainted with visual and tactual sense-data, these beliefs could neither exist nor be justified. But is this their whole basis? Plainly it is not. To see that it is not, we have only to consider any such belief, and ask what exactly it is that the belief is about. For instance, I believe that this tomato is red, smooth, soft, and sweet-tasting. It is obvious that this is not a belief about a sense-datum. For no single sense-datum has all these qualities. Further, I believe that the tomato is ripe and vitaminous: and these characteristics do not seem to characterize any sense-datum at all. It follows that though sensing is *necessary* for the holding of such beliefs, it is certainly not *sufficient*. There must be some further process or act, by which the subjects of such beliefs are brought before the mind.

It is true that according to Berkeley and many other philosophers material things are wholly composed of sense-data. But even so, sensing would not be sufficient. For even on this view, a material thing is not *a* sense-datum, but a complicated *group* of sense-data. And it is plain that even if all the members of the group are sensed, yet the group itself is not given in sense. In order to bring the group before the mind, we should have to 'collect' the sense-data (to use a term of Mr. Russell's)—or perhaps this would *be* the bringing of it before the mind. And the collecting would have to include at least two processes distinct from sensing. The sense-data are sensed successively, so that memory will be required.¹ And even when (with the help of memory) a number of sense-data past and present are assembled before

¹ This is Kant's 'Synthesis of Reproduction in Imagination.' Cf. *Critique of Pure Reason*, A 100

the mind, we have still to recognise that they stand in such and such relations to each other, say of similarity or spatial collocation or what not; otherwise, though aware of the members, we are not aware of the group.¹ Nor would that be all. For it would probably be admitted, first, that such a group would have no finite number of members; and secondly, that sense-data are private, i.e. that no one mind can sense sense-data sensed by any other mind, while the group is not restricted to any one mind's sense-data. It would follow that no one mind *could* sense all the sense-data which (on this view) compose an object. And even if these admissions were not made, still it is certain that hardly any one who entertains beliefs about a particular material object has in fact sensed more than a very few of the data which are alleged to compose it; it is quite possible that he has only sensed one of them, i.e. has 'just glanced at' the thing as we say, or 'just felt it'. Thus the so-called collecting will have to include the *supplementation* of the given members of the group by not-given ones; i.e. the knowing or believing that in addition to the colour-patches, pressures, smells, etc., actually given to me as I observe the object, there is a vastly—perhaps infinitely—greater multitude of colour-patches, pressures, smells, etc., related to them in the appropriate object-composing manner, but not actually given to me at all. The most we could say would be that, in the case of beliefs based directly on observation, at least one member of the group must have been actually sensed by the holder of the belief, and each of the members *could* be sensed by some observer, human or animal.²

Thus even if a material object is wholly composed of sense-data, sensing is not a sufficient (though it is a necessary) condition of holding beliefs about it. Some further mental process or attitude is needed. And *a fortiori* this will be true on other theories concerning the nature of material objects. Since the time of Thomas Reid, this further mental process has often been called 'perceiving': thus it would often be said that we *sense* colour-patches, noises, pressures, etc., but we *perceive* tables, mountains and tomatoes. This usage of 'perceive' is very convenient and has been adopted by the majority of philosophers and psychologists. But unfortunately there is an

¹ This is Kant's 'Synthesis of Recognition in Concepts', *ibid.*, A 103.

² It follows that the theory that the thing is a group of sense-data is just as much a 'representative theory of perception' as any other—or just as little.

ambiguity in it. Let us consider any illusion of sense, e.g. seeing double, and let us suppose that the observer is actually deceived by it. Everybody agrees that he senses two sense-data. Are we to say that he perceives two candles or not? I think the majority of philosophers would say that he does. If so, it is possible to perceive what does not exist (though of course what we *sense* always exists when we sense it) and it would be necessary to distinguish between true and false perceiving.

But in another sense of 'perceive',¹ and one that comes closer to ordinary speech, it is not possible to perceive what does not exist, and the distinction between true and false does not apply to perceiving at all. In this sense 'I perceive a candle' means: (1) I sense a sense-datum; (2) this sense-datum is related to a candle in a peculiar and intimate manner; (3) there is no other thing to which this sense-datum is related in that manner. In this sense, perceiving is not a specific form of consciousness, like acquaintance or believing or wondering; it does indeed involve a specific form of consciousness, namely sensing (acquaintance with sense-data), but that which it involves in addition is not a form of consciousness at all—it is a merely *de facto* relation. (Hence certain philosophers, believing that acquaintance too is a relation, have described perceiving as a *relative product* like 'being a nephew of'.)² It follows that if a material thing is in this sense perceived, then that thing necessarily exists. But this by no means implies that all perceiving is true (or 'veridical'). It cannot indeed be called false, but that is only because it cannot be called true either; just as, if Smith has a brother and I have met Smith, there is a complex involving me, Smith, and Smith's brother, but this complex is not the sort of thing to which the distinction between true and false applies. It follows too that just as I can meet Smith without knowing or even guessing that he has a brother, so too I can perceive a material object and yet not know or even guess that that object exists: either because I believe that it does *not* exist (or is somewhere else), as when Jones whom I

¹ There is still a third sense of 'perceive' in which it simply means 'be intuitively aware of' (cf. Descartes' clear and distinct perception'). In this sense, we could perceive sense-data, states of ourselves, and even *a priori* truths, e.g. those of Mathematics and Logic but it is very doubtful whether we could be said to perceive chairs and tables. This usage is so peculiar, and so much in conflict with ordinary language, that it has been generally abandoned, and we shall say no more about it here.

² Cf. Miss L. S. Stebbing, *A Modern Introduction to Logic*, p. 171.

believe to be dead or in Greenland enters the room, and I do not recognize him but take him for some one else—yet it is certainly Jones himself that I have ‘perceived’;—or again because I just have no conscious attitude towards it at all, whether of knowledge or of belief, true or false, or even of wondering. Yet still I should be ‘perceiving’ that object of whose very existence I was utterly ignorant, provided I was sensing a sense-datum which was in fact related to it in the required manner.

Both these senses of the term ‘perceive’—both that in which it stands for a specific mental process capable of truth and falsity, and that in which it stands merely for a complex situation—are of great importance. Which of the two usages are we to adopt? Common sense, or rather common language, points on the whole to the second, though not without vacillation. (Of course it does not very often use the word ‘perceive’ at all, but prefers to speak of ‘seeing’, ‘touching’, ‘smelling’, etc.) Usually when we speak of seeing a lion or smelling a rose, we do mean to convey that the lion or the rose exists. Also we say when looking for some distant object in the dusk, ‘I am not sure whether I see anything or not’,¹ whereas if ‘seeing’ meant a specific act of consciousness (as ‘believing’ or ‘apprehending’ does) we could hardly fail to know whether we were seeing anything or not. On the other hand, we do sometimes say that a delirious person ‘sees things that aren’t there’ or ‘hears’ non-existent voices; but when we do, we are apt to correct ourselves and say ‘of course he didn’t really see them, for there was nothing there to be seen, only he was in such a state that he thought he did’. (The state presumably was one of sensing certain sense-data, and this was due to his abnormal physical and mental condition.)

In this situation, the only safe course is to avoid the word ‘perceive’ altogether. It might indeed seem allowable to adopt the *first* sense of the word and use it as a name for that other mode of consciousness, additional to sensing, which is presupposed by the holding of beliefs about material objects; for we must have some name for this. We should then be following the majority of the philosophers and psychologists of

¹ ‘I am not sure whether I see *the house* or not’ is ambiguous: for it might mean ‘I am sure I do see *some* object, but I am not sure that it is a house’. The example in the text is intended to avoid this ambiguity. (There is the same ambiguity in ‘You must have seen King’s College without knowing it’.)

recent times. Since the term is in any case mainly a technical one, does it matter much whether we follow the usage of ordinary language or not? But unfortunately there are several philosophers, including Professor G. E. Moore, who have adopted the *second* sense. And although we can perhaps afford to neglect ordinary language, we cannot neglect these philosophers. But neither can we follow them, for the first sense of the word is equally familiar, and if we adopted the second, many readers would certainly be misled. And as both senses are extremely important for our inquiry, we shall have to invent substitutes for both.

First, we must find some name for the non-sensuous mode of consciousness of which we have spoken. For the present we shall simply call it *perceptual consciousness*.¹ Later on, when we come to discuss it more fully, we shall suggest a more definite term. But for the present it seems desirable to use a vague one which commits us to as little as possible.

Secondly, we need some name for the situation where a sense-datum is sensed which is related in a peculiar manner (to be discussed later) to one material thing and one only.² We shall describe this as *having a material thing present to one's senses*.³ There is now no excuse for mixing this up with *being perceptually conscious of a material thing*. It is clear that an object can be 'present to my senses' when I am mistaken about its nature, or even when I am unaware of its very existence: thus the straight stick is present to the senses of the man who takes it to be bent; and the house which I pass every day, without ever noticing it, is repeatedly present to my senses, but I am never aware of its existence.

Also, thirdly, we need a name for the relation subsisting between the sense-datum and the material thing when the material thing is present to the senses of the being who is

¹ In this book the word 'object' will be used to mean 'material object' or 'body', not to mean 'that which the mind is directed upon' ('object of awareness')—except for such expressions as 'object of scientific inquiry', 'object of interest', where the added prepositional phrase prevents misunderstanding.

² It is true, as we shall have occasion to point out later, that a tactual sense-datum is related in this manner *both* to the thing 'touched' and to my own body which 'touches' it. (In 'feeling' the table I also 'feel' the surface of my own finger-tip.) But thanks to this contact, we may say that those two things temporarily form one single complex thing.

³ By 'senses' I do not mean 'sense-organs' but 'sense-faculties', i.e. the power of being acquainted with this or that kind of sense-datum.

sensing that sense-datum. For the present we shall follow Professor Moore in calling it the relation of *belonging to*.¹

It is plain from this discussion that there are two main questions which confront us.

1. What is perceptual consciousness and how is it related to sensing?

2. What is the relation between a sense-datum and a material thing when the thing is present to the senses of the being who senses the sense-datum? i.e. what is the relation of belonging to?

These two questions are different, but they are not entirely separable. Any answer to one greatly narrows the range of possible answers to the other, so that to a large extent they can be discussed together. Also we shall find that in discussing question (2) we cannot avoid saying something about the nature of material things themselves. For instance, if it be suggested that the relation of belonging to is that of member to group, we must perforce discuss the view that a material thing is a group of sense-data.

It is convenient to begin by discussing certain plausible but erroneous answers to our questions. And it is natural to consider first the view called *Naïve Realism*. The name is not a very suitable one (for the view is hardly a faithful analysis of the unreflective assumptions of the plain or naive man), but it is well known and serves as a convenient label.

Naïve Realism offers answers to both our questions. First, it holds that my consciousness of an object is the *knowing that* there exists an object to which the sense-datum now sensed by me belongs. Perceptual consciousness would not be acquaintance or intuitive apprehension of a particular, as sensing is. It would be knowledge about, or apprehension of a fact. But it would be like sensing in that it would be knowledge, and not mere belief or mere taking for granted.

Secondly, Naïve Realism holds that in the case of a visual or tactual sense-datum, belonging to means the same as *being a part of the surface of*: in that literal sense in which the surface of one side of this page is part of the whole surface of this page. Thus if we ask a Naïve Realist what sort of thing it is whose existence he knows of in an act of perceptual consciousness, he answers: It is that which visual and tactual sense-data are parts of the surface of. And having a surface, it must be a three-dimensional entity located in space. No doubt he would

¹ It is sometimes called 'being an appearance of'.

add that it persists through time and has various causal properties, and that it makes no difference to these spatial and temporal characteristics and these causal properties whether we sense the sense-data belonging to it or not; for this is universally admitted to be part of the meaning of the term 'material thing'.

It is commonly held that the *Argument from Illusion* (as it is called) is sufficient to refute Naïve Realism. And this seems substantially true. But what exactly the argument proves is not very clear. The fact seems to be that there are really two distinct arguments: for want of better names we will call them respectively the Phenomenological Argument and the Causal Argument. Contrary to common opinion, the first is by far the more important. It seeks to show directly that there are visual and tactual sense-data which cannot be identical with parts of the surfaces of material objects. The second seeks to show that visual and tactual sense-data only exist while certain processes, other than sensing but contemporary with it, are going on in the nervous system and perhaps in the mind of the being who senses them. And it is inferred from this that they cannot be identical with parts of the surfaces of objects, for such an object (and therefore the surfaces of it) *ex hypothesi* continues to exist at times when we are not sensing, and it is now contended that at those times the sense-data do not exist.

It is not at all easy to state either of these arguments clearly, and in a form which will survive obvious criticisms. The first thing to do is to say what the term 'illusion' means. We must be careful not to define it in causal terms, for this, as we shall see, would lead to a vicious circle. I suggest the following provisional definition. An illusory sense-datum of sight or touch is a sense-datum which is such that we tend to take it to be part of the surface of a material object, but if we take it so we are wrong. It is not necessary that we should *actually* so take it. Thus if I were to see a mirage knowing it to be a mirage, I should not be deceived. But the sense-datum would be none the less illusory: since I do *tend* to take it for part of the surface of a pool of water, and if I actually did I should be wrong. Nor have we begged the question against Naïve Realism in saying this. For we have only been saying what the term 'illusory' means: whether there are really any instances of it, remains to be seen.

Does the notion of illusoriness apply to data of the other senses? Could there be an illusory sound or smell? It seems clear that there could. But here for 'being part of the surface of' we must substitute something like 'emanating from'. By *s* emanates from *O* we should mean roughly (1) *s* is caused by *O*, (2) *s* is more intense in the neighbourhood of *O* than elsewhere.

Now there is no doubt that there are illusory visual and tactual sense-data in the sense defined. Let us begin with visual ones. First, *Perspective* provides plenty of instances. We all know that stereoscopic vision is possible only within a relatively narrow range. Outside this range there is what is called Collapse of Planes, and objects undergo various sorts of 'distortion'. Thus a distant hillside which is full of protuberances, and slopes upwards at quite a gentle angle, will appear flat and vertical, like a scene painted on cardboard. This means that the sense-datum, the colour-expanse which we sense, actually is flat and vertical. And if so, it cannot be part of the surface of something protuberant and gently sloping.

Again in *Reflection* the sense-datum is dislocated from the object and reversed as to right and left. Often too it is 'distorted', i.e. its shape differs from the shape of the object, as with the reflection of a tree in water ruffled by a breeze, or that of a lamp in the polished surface of a shoe. In *Refraction* there is distortion and commonly dislocation too, as with things seen through uneven glass. The like occurs with *physiological disorders*, as for instance in seeing double, where there are two sense-data which cannot both be parts of the surface of the object, for at least one is in the wrong place, and moreover both are flattened. (It is worth remembering that in binocular vision things not in focus are always seen double; and that in the visual experience of an insect every piece of matter is probably multiplied fifty or a hundred fold.) The phenomena of giddiness provide an analogous instance, particularly that giddiness which precedes a fainting fit, where the walls of the room not only 'turn round' but 'move in and out'. *After-images*, which are sense-data completely cut off as it were from the thing, changing and moving independently of its changes and motions, and even capable of existing after its destruction, are the transitional cases between these distorted and dislocated sense-data, and the completely 'wild' ones¹ which are characteristic of *Hallucination*. In hallucination the sense-

¹ This happy use of the term 'wild' is due to Dr C. D. Broad.

datum fails to belong to any object in any way at all, though of course the sentient still *takes* it to belong to one. Total hallucination in which the entire field of view consists of 'wild' data is probably confined to lunatics and delirious patients. But partial hallucination, where part of the field of view is wild and part is not, is far from uncommon; for emotion and habitual expectations often cause one to see what one expects to see, for instance (to take some cases from the writer's own experience) they cause one to see 3 instead of 8 when one is waiting for No. 3 bus, or to see a log of wood with protruding branches as a recumbent black and white cow, or a cyclist carrying a milk-can in one hand as a pedestrian leading a goat. In such cases the sense-datum is 'cooked' and supplemented by the mind. And such 'cooking' may be negative as well as positive: some part of what is physically before our eyes has at a certain moment no visual sense-datum belonging to it though other parts have (Negative Hallucination). The failure to see misprints, and sometimes entire words, will illustrate this. When we see the right word instead of the misprint—the most common case—there is a combination of negative and positive hallucination.

Nor must we forget that there are illusions of touch as well as of sight, though they are much less frequent. It will not do to say, with some philosophers, that at least all tactual sense-data are parts of the surfaces of material objects, even if many visual ones are not. Thus a man whose leg has been amputated feels pressure upon his now non-existent foot: i.e. he has a tactual sense-datum similar to those which he used to have before, but there is now no foot with part of whose surface it could be identical. Again a case has been described in which the patient's brain was operated upon while he remained conscious: when the appropriate region of it was stimulated with a mild electric current, he reported that he felt as if some one was stroking his finger, though nobody was. Thus he sensed a certain tactual sense-datum in the absence of the material thing to which such a datum would ordinarily belong. It is less often realized that there is something corresponding to perspective in touch. Thus a sixpence feels bigger if laid on the tongue than if laid on the back of the hand; and a pair of fixed compass-points drawn across the face appear to diverge as they pass the lips. And it has been pointed out that there are occasional after-images of touch. Thus when my hat is taken off my head, I still continue to feel it there for

a time : ¹ and the same is true if some small object such as a matchbox is placed on one's head for a minute or two and then removed.

The Phenomenological form of the Argument from illusion simply points to such facts as these and contends that they directly refute Naïve Realism. And it certainly does seem clear that there are a great many visual and tactual sense-data which cannot possibly be parts of the surface of material objects in any natural sense of the words 'surface' and 'part'. It follows that perceptual consciousness cannot always be a form of knowing, as the Naïve Realists say it is, for it is certainly sometimes erroneous. The Causal Argument uses the same facts in another way. According to it, they show that sense-data vary with variations in the medium between the observer and the object, with variations in the observer's sense-organs, and with variations in his nervous system. And we never find a sense-datum in the absence of a sense-organ and a nervous system, and in sight, hearing and smell we always find a medium as well. Such constant conjunction and concomitant variation, it is urged, are obviously signs of causal dependence. Moreover, this causal dependence is in all cases a dependence on the *brain*. For the states of the intervening medium and of the sense-organs and afferent nerves only make a difference to the sense-datum in so far as they make a difference to processes in that : otherwise they are irrelevant. And the state of the external object itself is only relevant in so far as it indirectly affects the brain, while in hallucination the external object is dispensed with altogether. Further, this dependence of sense-data upon the brain is a *complete* dependence. There is no quality possessed by sense-data which is not subject to this concomitant variation. Thus sense-data are not merely affected by brain-processes, but entirely produced by them. It even begins to seem conceivable that they are themselves cerebral events qualified in a certain way.

If all this is so, no sense-datum can continue to exist in the absence of the cerebral processes which generate it, and therefore no sense-datum can be part of the surface of an external (i.e. extra-cerebral) object, e.g. of a table. If the sense-datum is a cerebral event, this is obvious. If it is produced by cerebral events without being one, the conclusion still follows. For when we cease from sensing, the table *ex hypothesi* remains unchanged. But it now appears that when we cease from

¹ I owe this observation to my friend, Mr. H. M. N. Hollis.

sensing, the sense-datum itself ceases to exist : it is not merely that the colour-patch or pressure ceases to be a datum, i.e. ceases to be sensed by a mind ; it is altogether abolished. (Not that it depends for its existence upon being sensed—that is absurd, since sensing is a form of knowing—but upon another process which only occurs when sensing does.) But if no change occurs in the object when I cease from sensing, then the abolition of the sense-datum cannot be a change in the object, and therefore the sense-datum cannot have been a part of its surface ; and we may add, cannot have been a constituent of the object in any other way either.

It might be thought that both arguments could be met by drawing a distinction between *normal* and *abnormal* sense-data. We should then say that normal sense-data of sight and touch *are* parts of the surfaces of material things and are *not* dependent on processes in the observer's brain : while abnormal ones are dependent on processes in the brain and are not part of the surfaces of material things, but are related to the things in some more complicated way. The material thing would still be the remote though not the immediate cause of them, and they might still resemble parts of its surface though they would not *be* such parts. This is a considerable modification in the original theory, but quite a plausible one. We should also have to modify the original account of perceptual consciousness. When I sense an abnormal sense-datum, we must say, I merely *believe* that there exists a material thing part of whose surface it is : only when I sense a normal one do I *know* that there exists such a material thing.

But this will not do. The difficulty is that there is no qualitative difference between normal sense-data as such and abnormal sense-data as such. Indeed the whole trouble about abnormal sense-data is precisely that they simulate normal ones. Otherwise it would not even be possible for us to be deceived by them ; they would be strange, but they would not be illusory. We shall give two examples. The abnormal crooked sense-datum of a straight stick standing in water is qualitatively indistinguishable from a normal sense-datum of a crooked stick. Again a mirror-image of a right-hand glove 'looks exactly like' a real left-hand glove ; i.e. the two sense-data are indistinguishable, though one is abnormal, the other normal. Is it not incredible that two entities so similar in all these qualities should really be so utterly different : that the one should be a real constituent of a material object, wholly

independent of the observer's mind and organism, while the other is merely the fleeting product of his cerebral processes?

We may also appeal to considerations of continuity. When a cricket ball, for instance, is seen from twenty yards off, the sense-datum is flat and therefore abnormal. From a short distance, say two yards, which is within the range of stereoscopic vision, the sense-datum is no longer flat but bulgy and accordingly normal. (We will suppose that there are no complications arising from bad light or drugs or ocular disorders.) But what about intermediate distances? I start from two yards off, and walk slowly backwards, keeping my eye on the ball. At a certain point in my walk, the sense-datum just begins to be flattened; and this must mean that the normal sense-datum is replaced by an abnormal one. There is all the difference in the world between these two sense-data, if the theory is correct. The first is a physical entity, which continues to exist whether my body is present or not, the second is a mere cerebral product. We should expect at least a jerk or a flicker as the one is replaced by the other. But in point of fact we find nothing of the sort. There is a sensibly continuous transition from the bright bulgy patch sensed from two yards off to the faint, small, flat one sensed from twenty yards off, without any break at all. Moreover, if the last normal member of the series be taken (and according to the theory there must be a last one), then it will be possible to find an abnormal member which differs from it as little as you please, in size, colour, and bulginess. Now it seems most extraordinary that there should be a total difference of nature where there is only an infinitesimal difference of quality. It also seems most extraordinary that so radical a replacement should be brought about by an infinitesimal backward movement of the observer's body.

Nor is the other part of the theory more plausible. There is no discernible difference in our consciousness when we pass from sensing a normal sense-datum to sensing an abnormal one, or vice versa. In both cases there is acquaintance with something, and in both cases there is also 'perceptual consciousness'. What the nature of this 'perceptual consciousness' may be we are to consider later, but certainly it is the same in both cases. It is impossible to hold that it is knowledge in the one and mere belief in the other.

It might indeed be thought that we could avoid this particular difficulty by making the knowledge less determinate. Might

there not be different sorts of 'belonging to'? Normal sense-data might then belong to the thing in one way and abnormal in some other way. And this would enable us to admit that the consciousness is of the same nature in both cases. In each case, it might then be maintained, it is knowledge; and what we know is that there exists some material thing or other to which this sense-datum belongs in some way or other: in which way, and therefore also what particular sort of material thing, would remain to be determined later. But apart from the difficulty of understanding how this determining is to be done, the existence of hallucinations is a fatal objection to the theory. In hallucination, for instance in the visions of delirium, the sense-datum is completely wild; it does not belong to any material thing in any way at all. The pink sense-datum, to take the usual case, not only does not belong to a pink rat, as the sentient himself assumes: it does not *belong to* anything, and indeed owns no allegiance of any sort except to the disordered nervous system which generates it.

Thus if these two arguments are correct, Naïve Realism is certainly false. If they are correct, it cannot be held that all visual and tactual sense-data are parts of the surfaces of material objects, and considerations of continuity suggest strongly that none are. Nor can it be held that all instances of perceptual consciousness are instances of knowing, and it is strongly suggested that none are. The positive conclusion is that all sense-data are produced by processes in the brains of the beings who sense them.

Both arguments seem very strong ones. But unfortunately both are open to objection. We shall find on examination that the Phenomenological Argument survives with but slight alteration. But the Causal Argument has to be radically restated, and when this has been done, its conclusions turn out to be much less important than they seemed, and to admit of two entirely different interpretations.

The objection against both arguments is in essence this: that both of them tacitly assume in their premises the truth of the very theory which they profess to disprove.

The Phenomenological Argument relies entirely upon the citation of negative instances. With regard to each instance it argues as follows: 'Here is a particular sense-datum *s* and here is a particular material thing *M*. According to Naïve Realism *s* ought to be part of the surface of *M*. But it is

obvious on inspection that *s* is not part of the 'surface of *M* because *M* is in another place or because it has another shape or size.' Now unless we know such facts about *M*, the argument obviously breaks down. How can we know that the flat sense-datum is not part of the surface of the cricket-ball, unless we know that there really is a cricket-ball and that it really does have a surface which is spherical? Or how do we know that the reflection of the glove is dislocated as to position and reversed as to right and left, unless we know where the glove itself is and how its parts are arranged? And even with 'wild' sense-data there is the same difficulty. The man with the amputated leg is aware of a tactual sense-datum, which he takes to be located on the surface of his foot. Here it is said there is not really any material object at all for the sense-datum to belong to. But how can we be sure that there is not? Clearly only by knowing that where the foot purports to be there is in fact some *other* piece of matter, e.g. a chair-leg or a volume of air. In the same way we profess to know a number of facts about mirrors, physical media, lenses, eyes, and so forth.

But where do we get this knowledge about material objects which the argument demands? Clearly from observation (how else?)—that is, from sensing sense-data. Must we not then assume that *these* sense-data at least are, and are known to be, parts of the surfaces of objects, in order to show that others are not? Thus with regard to these sense-data, and with regard to these acts of perceptual consciousness, Naïve Realism would have to be true. And we should be refuting Naïve Realism at one point only by assuming its truth at another.

Now I suppose that every one feels that there is something wrong with this objection, and that it does not really save Naïve Realism. Indeed the Phenomenological Argument is in the opposite case from those sceptical arguments which Hume mentions. It admits of an answer, and yet it does not cease to produce conviction. The truth is, I think, that the objection does hold against many people who have used the argument, but that by stating our case more carefully we can avoid it: and that in two ways.

First, we might admit that we do have knowledge of the existence and nature of the cricket-ball, the glove, the chair-leg; that this knowledge is essential to the argument; and that we do get it from sensing sense-data. But, we might say,

there is no reason to assume that we get it in the way Naïve Realism alleges. It might be necessary not just to sense one sense-datum, but to compare a large number of sense-data and find that they stand in certain relations to each other. There might really be a relation of 'belonging to'—as indeed there obviously is—and we might be capable of knowing that particular sense-data belong to particular material things: and yet this relation might be different from what Naïve Realism thinks it is, e.g. it might be much more complex or less direct, or it might be many-one instead of one-one.

But secondly, we are not obliged to admit as much as this. All that the argument strictly requires is that we possess the conception of *material thinghood* or know what the term 'material thing' means. Knowledge about particular material things is not needed. We might have this conception without knowing whether it had any instances or not. (Not perhaps without *believing* that it had some, but the belief need never have been true.) Now there are in the conception of material thinghood two important elements. On the one hand, by 'a material thing' is meant something which can be present to the senses from many different places and in many different manners. It must be *multiply accessible*. Thus if there is anything which is a material thing, it must be possible for a multitude of different sense-data to belong to it. But also by 'a material thing' is meant something which is a single three-dimensional whole, having one closed surface, one shape, one size, and one position in relation to other material things. It must be *spatially unitary*.

But if Naïve Realism were right it would be impossible for anything to possess both multiple accessibility and spatial unity at the same time. For among the multitude of visual and tactual sense-data which the Naïve Realist and every one else regard as belonging to one single material thing M, the greater part will not fit together into one single three-dimensional whole. They differ from each other in size, in shape, in respect of flatness and solidity, in respect of amount of detail (thus of two sense-data alleged to belong to the same toothed wheel one is circular and the other serrated). And some are spatially dissociated¹ from the rest as in double vision, or as

¹ Some, too, are *temporally* dissociated from others: this is part of what we mean by saying that light has a finite velocity (Cf below, pp. 270-1). But we are not at liberty to use this fact at the present stage of the inquiry. For we cannot become aware of it by mere inspection of

reflections and mirages are dissociated from normal views. Thus they cannot all be parts of the surface of one unitary three-dimensional entity. And we know that they cannot, merely by inspecting the data themselves. We do not have to know that there is in fact such a spatially unitary entity, or that all these sense-data in fact belong to it. For we are only asserting that *if* there is such an entity to which they all belong, then they cannot all be parts of its surface.

The Causal version of the Argument from Illusion is not nearly so easy to defend. It is constantly talking of physical media, of mirrors, lenses and prisms, of drugs and physical diseases, and especially of sense-organs, nerves and brains. Thus it presupposes a vast amount of detailed knowledge concerning a variety of material objects. And this knowledge is certainly not *a priori*. It is got from observation: it presupposes both sensing and what we have called perceptual consciousness. Or, if it is not knowledge but only a body of beliefs, then the argument is proportionally weakened; and even so the beliefs are still based on sensing and on perceptual consciousness. Thus whatever the argument proves, it certainly cannot have the slightest tendency to prove that there are not material objects to which sense-data belong, or that if there are, they are not accessible to our minds; otherwise it would be contradicting its own premises. Yet it is frequently thought to prove these things. It even begins to seem doubtful whether it can refute Naïve Realism, which is a particular theory *about* this relation of belonging to, and about the accessibility of material objects to our minds. At any rate, we can be fairly certain that many people have used it who were themselves naïve realists with regard to the observation of mirrors, lenses, brains, nervous systems, and scientific apparatus. Such people, it has been said,¹ are 'naïve realists in the laboratory and subjective idealists outside it'. Or perhaps they are naïve realists with regard to their own observations, but subjective idealists with regard to the observations of common men. There is many a thinker who assumes without question that his own sense-data were parts of the surfaces of the eyes or nerves or brains which he

sense-data. Physical experiment is needed, and this does presuppose knowledge of the existence, nature, and situation of various physical objects.

¹ Cf. Professor John Laird's discussion of this point in *A Study in Realism*, p. 30.

has examined, while he assures us that the sense-data sensed by his patients or his readers are mere products of their nervous systems, having but a dubious correspondence with Reality. I pass over the even more extraordinary *naïveté* of those philosophers who argue that all sense-data are dependent upon the brain, and conclude that they depend upon the mind—and then, having done this, gravely urge that the whole material world is but a mental construction or a set of vicious abstractions, so that there are really no brains at all.

Despite these gross confusions in the statement of it,¹ the Argument from Illusion obviously does prove something, even in its Causal form and we must now try to see what. Obviously we shall never clear the matter up so long as we remain at the standpoint of Physiology. Let us be quite plain about this. An inquiry about 'belonging to' and about perceptual consciousness is concerned (among other things) with the foundations of Physiology itself. for all the empirical sciences are based on observation. No proposition in Physiology can possibly be *more* probable than such observational propositions as 'This that I now see is a human head', 'This is a lens', 'That is a microscope'. it can hardly fail to be *less* probable. No doubt some observational propositions are false (else there would be no illusion) But unless a great many of them have at least a considerable probability, no proposition in Physiology has any probability at all. And as a matter of fact some observational propositions are so obviously true (whatever the correct analysis of them may be) that no argument purporting to prove them false can possibly have any weight in comparison.

It is necessary, then, to give up the 'external' standpoint of Physiology, and to take up instead what is called the 'immanent' standpoint, that of the individual experient himself. We must try to return to what is indubitable, putting all prepossessions (including scientific prepossessions) out of our minds. This requires a peculiar mental effort, somewhat like that required when we look at a picture or a view in an aesthetic way, discarding the practical attitude of everyday life. We have to go back to the sense-data themselves: for they are what we are quite certain of. This argument which

¹ Of course I am not maintaining that physiologists commit these confusions in the course of their own scientific work. I speak only of the philosophizing physiologists, whose pronouncements on the Theory of Knowledge sometimes receive more credit than they deserve.

we are examining, if it has anything in it, must be based upon facts about sense-data, and these ought to be discoverable.

Now what we are acquainted with at any one time is not one single sense-datum but a number of generically different sense-data. Indeed at most moments of our waking life we are acquainted with tactual, auditory and organic sense-data, and usually with visual ones also, if we are not blind. Let us call this group of simultaneously given data the *Totum Datum*.

The Causal form of the Argument from Illusion does not so much prove anything, as draw our attention to two very important facts about the organization of this Totum Datum

1. It points out that at any moment the Totum Datum consists of two parts. The one part consists of what we may call *somatic* sense-data: the other of what we may call *environmental* sense-data. When I call the first set of data 'somatic' I do not mean to imply that they belong to a particular material object called my own body, though I think that as a matter of fact this is nearly always true. And likewise when I call the second set 'environmental' I do not mean to imply that they belong to material objects other than my own body. By 'somatic' sense-data I only mean those which I ordinarily take to belong to my own body, and by 'environmental' ones, those which I ordinarily take to belong to other objects. That I do habitually take some to belong to the one, and others to the others, is perfectly certain, whether I am right or wrong in my takings.

2. The second thing pointed out is that somatic and environmental data *vary concomitantly* in certain respects, and this concomitant variation never ceases so long as there is a Totum Datum at all. For instance, visual data vary in size, shape, position, and intensity with variations in kinaesthetic data.

(Of course there are many other sets of parts into which a particular Totum Datum may be divided besides this: e.g. into vivid data and faint ones, into extended and non-extended ones, into those taken to belong to solids, liquids and gases respectively. And there are many other types of concomitant variation which it may display. But *every* Totum Datum can be divided into a somatic and an environmental part, and in every Totum Datum there is concomitant variation of these two.)

We may sum up the thesis as follows. Somatic and environmental sense-data are always co-present and co-variant. We shall express this by saying that *the Totum Datum is always*

somato-centric. This is what those who use the Causal form of the Argument from Illusion are really trying to show—little as they may be aware of it.

But this established, what follows? It is not at all easy to say. But certainly it does not follow that all sense-data are products of the brain (though of course there may be other reasons for thinking that they are).

For in the somato-centric *totum* there is no reason to give priority to the somatic side rather than to the environmental. What we always find is both sides together, and a *concomitant* variation between them. Of course it is also true that a variation on the somatic side sometimes *precedes* a particular variation on the other side. Thus the staggering of the whole field of view when one is about to faint is preceded by a marked change in the whole quality of the somatic datum. But equally it is sometimes the other way about. Thus I am aware of the succession of visual data purporting to belong to an approaching cricket-ball before I feel the blow on my hand or head.

Thus if somato-centricity is a sign of causal dependence, it is no one-way dependence of the environmental on the somatic. But is it a sign of dependence at all? It can indeed be taken *connectively*, as a sign of dependence. But it can also be taken *selectively*. Let us consider these two alternatives a little.

On the *connective* interpretation, the most we could maintain would be this: that as somatic and environmental data are never in fact found apart, therefore they cannot exist apart. Of course a particular environmental datum could exist without a particular somatic datum, e.g. a distant view of a tree without the feeling of sitting, but not without *some* somatic datum. Equally a particular somatic datum, say a twinge of toothache, could exist without a particular environmental datum, say a square blue patch: but not in the absence of *all* environmental data. We are never wholly destitute of tactual data; and very rarely (if at all) of auditory ones, for what we call 'silence'¹ can be heard. Thus the contention would be that environmental data in general cannot exist without somatic data in general, nor somatic without environmental. The somato-centric *totum* would be a kind of *organic whole*.

Now it is true that on this interpretation the argument does

¹When I say 'There was silence' I mean something like 'My auditory data were of faint intensity and no one of them differed greatly from any other'.

refute Naïve Realism. But it is by no means true that it refutes *all* forms of Realism, as is sometimes thought, i.e. all forms of the theory that there are material objects to which sense-data 'belong', and which exist at times when we are not sensing. For *if* the argument tended to show that in the absence of my body other material objects cease to exist (as what we may call Physiological Idealism maintains), it would equally tend to show that in the absence of other objects my body ceases to exist: for I have no experience of my body existing in isolation. The plausible view for a sceptic to take is rather that nothing exists except this that and the other Totum Datum, each of which is both somatic and environmental at once. On such a theory the environment does not exist without the nervous system, nor the nervous system without the environment (so far as we can speak of such things at all); they are correlatives, and really there is only the whole consisting of both in mutual correlation. This twofold whole would constitute the knowable world, and it would be a series of short-lived somato-centric complexes punctuated by gaps (periods of unconsciousness) containing just nothing at all. And if you will, there is a single unknown something which produces both correlatives alike. I do not say that this theory is true—far from it. But at least it is not stupid, as Physiological Idealism is.

Now let us turn to the *selective* interpretation.¹ According to this, the somatic data are merely *instrumental*. They enable us to be conscious of environmental data. When I have one sort of somatic datum, one sort of environmental datum is revealed to me; when I have another, another. But between environmental and somatic there is no relation of dependence either mutual or one-sided. What is connected with the somatic datum is the act of sensing and that only. We may illustrate by an analogy. If I am to select a bun from the counter my hand must be there to pick it up. If I move my hand to the left I pick up bun No. 1, if to the right, bun No. 2. But the bun which I do pick up is in no way dependent upon my hand for its existence, nor my hand upon the bun. Hand plus bun do not form an organic whole, and either could exist without the other. Still less can we say that the hand creates the bun. Physiological Idealism, which says that the somatic

¹ Cf. Sir T. P. Nunn, 'Are Secondary Qualities Independent of Perception?' in the *Proceedings of the Aristotelian Society*, 1909-10 (N.S., vol. x).

datum creates the environmental, is no less absurd than such a 'Manual Idealism' would be. And it is plain that on *this* interpretation of it, somato-centricity is not in the least incompatible even with Naïve Realism. But of course Naïve Realism would still be refuted by the Phenomenological Argument.

We may notice an alternative way of stating this selective theory, according to which the function of the somatic sense-data is obscuration rather than revelation. In the absence of all somatic data, it might be said, we should be conscious of everything that exists. But as this would be very confusing, the somatic data (for good biological reasons) are so arranged as to cut off most things from our view, and leave only a few at any one moment, so that we may be able to act.¹

We may now consider the further implications of the Selective Theory. The most important is that there is no reason left for believing that colour-patches cease to exist when our eyes are shut, sounds when our ears are removed, prement patches in the absence of our skin, and so on. Of course there was never any reason for thinking that these entities depended in any manner upon the sensing of them, for sensing is a form of knowing. But there did seem to be reason for thinking that they were dependent upon *other* processes contemporary with sensing, namely processes in the brain: the Causal form of the Argument from Illusion seemed to have shown this. However, our criticism of it has revealed that it is thoroughly confused. And it is now open to us to interpret these cerebral processes selectively (or 'instrumentally') like those somatic data which are their overt manifestations. If so, we have no reason for thinking that sense-data do not persist before and after we are acquainted with them, as other *cognita* do. Or, if it sounds odd to speak of unsensed sense-data, we may call them *sensibilia* with Mr. Bertrand Russell,² the difference between a sensible and a sense-datum being solely that we are acquainted with the latter and not with the former. (Of course this does not mean

¹ A doctrine something like this is to be found in M. Bergson's *Matière et Mémoire*.

² Cf. *Mysticism and Logic*, p. 148. In Mr. Russell's earlier treatment of the subject in *Our Knowledge of the External World*, lecture 3, there is an analogous distinction between actually sensed 'private worlds' and unsensed 'perspectives'. Mr. Russell's theory however is not a purely selective one. Cf. *op. cit.*, p. 88.

that every sensible exists for ever or in all circumstances. It only means that the not being included in a somato-centric complex does not stop it from existing. And a sensible could become a sense-datum without any change in its qualities, and vice versa.)

This suggests, though it does not strictly necessitate, a new view of the nature of objects, and of the relation of belonging to. Let us consider the visual and tactual sense-data belonging to the table. It is obvious that there will be no finite number of them, if only because there is no finite number of points of view from which the table can be present to our senses. Thus there will be an infinite multitude of sensibilia belonging to the table. And as all these in any case exist unsensed, why not say that the whole collection of them *is* the table? Would not the collection of them have all the causal and other characteristics which we expect a table to have? (Of course these 'physical' characteristics would be manifested by the collection as a whole, not by the individual sensibilia.) It would follow from this that the relation of 'belonging to' is the same as the relation of member to group. And as for the hallucinatory or wild sense-data which gave so much trouble to Naïve Realism, these we should say exist unsensed like any others. Only, such a sense-datum would either belong to no group at all, and this would constitute its 'wildness': or not to the sort of group which has physical characteristics—in which case it would belong to an object of some sort, but not to an object 'in this world'.¹

Such a theory is of course different from Naïve Realism. Yet I think we may maintain that it gives the Naïve Realist all that he really wanted, and indeed more than he dared to ask. For what he really wanted was a theory in which visual and tactual sense-data were somehow *constituents* of the material object itself, not mere effects or representatives of it. He wanted to interpret the statement '*this* is a table' as literally as possible. Since 'this' is the sense-datum with which I am now acquainted, it obviously cannot literally *be* a table. No one could suppose that a patch of colour or a pressure is the object that you can sit on or have your dinner off. But if it is in some way a constituent of the table, that is the next

¹ Such a view of hallucinatory sense-data is of course quite seriously held by some people. Mr Russell, however, does not appear to hold it in the two works just mentioned. (In his later works he seems to have abandoned the Selective Theory altogether.)

best thing. And when asked what sort of constituent it is, the Naïve Realist merely jumped to the most obvious answer. Moreover, the Selective Theory gives him more than he hoped for, because it allows him to say that not merely visual and tactual data, but also sounds, smells and tastes, are constituents of the object ¹

It is evident that the Selective Theory is extremely attractive; the more so because it makes the 'secondary' qualities no less part of Nature than spatial, temporal, and causal characteristics. Thus it heals the breach between the Nature of the poets and the Nature of the physicists, and perhaps no one but a poet could do full justice to it. In spite of these attractions, the theory has been rejected by almost all philosophers. The usual arguments against it do not however appear very strong

It is sometimes thought to be just obvious that there cannot be unsensed sensibilia, e.g. colour-patches or sounds with which no one is acquainted, in which case the Selective Theory would not even be worth discussion. Now of course it may in fact be true that there are none, but I cannot see that it is obvious. Of course if by sensing one means *sense-datum-genesis*, then it is plausible to say that what is sensed cannot exist apart from sensing, this would be just a way of saying that colour-patches, sounds, etc., are events. But if that is what one means by 'sensing', then one has got to face the possibility that 'sensing' can go on in the absence of minds. That the coming-into-being of a sound or colour-patch is a psychical (or a physiological) process must be proved, not merely assumed. Or if its psychical nature is a matter of *definition*, so that sensing just means the coming into being of a psychical event which is coloured, or noisy, or hot, then the question has been begged against the Selective Theory in the definition. It must be proved, and not merely assumed, that there is any real process answering to the definition. For the whole point of the Selective Theory is to maintain that there is no process which is both the genesis of a colour-patch or sound, and

¹ It is evident that the Selective Theory is extremely like one of Berkeley's theories, viz. the one which identifies a material object with a complex group of 'ideas' (i.e. sense-data) existing in the mind of God. It is true that the Selective Theory leaves God out, but so far as the *structure* of the object goes, and the independence of its constituents upon our minds, the two theories are exactly alike. It is noteworthy, too, that Berkeley recommends his theory on the ground of its closeness to Naïve Realism (cf. the end of the *Third Dialogue*).

psychical in character, i.e. that there is in *this* sense of the word 'sensing' no sensing at all.

But it is surely plain that sensing does not ordinarily mean anything of the sort. If it means what it ordinarily means, viz. acquaintance or intuitive awareness, then it is obvious that sense-data are not dependent on sensing, even if they are dependent upon some other process which accompanies it (which, as we have seen, has not yet been shown). Even if they are psychical events, they are still not in any way dependent upon the sensing of them. For to say that anything, even so humble an entity as a sense-datum, is dependent for its existence or for any of its qualities upon our being aware of it, is to deny that there is any such thing as awareness; and thereby to contradict oneself.

Secondly, the Selectivist is asked whether he really thinks that roses are red in the dark and that bells are noisy in a vacuum. This is a silly objection. The Selective Theory does not say that red sensibilia continue to exist in *all* conditions, but only that they continue to exist outside of somato-centric complexes. It can perfectly well hold that in the absence of a source of light nothing is coloured, and that when the light is altered, red sensibilia are replaced, say, by grey ones. (Of course prement sensibilia would be unaffected.) And there might be coloured sensibilia which are not accessible to human senses at all, and which still exist in what we call darkness. Thus to living creatures otherwise constituted, X-rays might reveal sensibilia with which no human being can be acquainted.

Thirdly, with regard to the so-called Secondary Qualities, the Selectivist is asked to say *which* colour belongs to the rose when nobody is looking at it. For when it is being looked at, it appears to have one colour to A, another to B, another to C, and so on *ad indefinitum*.¹ The answer is obvious. It has them all. Or rather all these sensibilia, each with its colour-quality, are constituents of the rose. We need to have a more catholic conception of the rose's nature. A sees only one of the colours. But he must not suppose that if this colour belongs to the rose when his eyes are shut, then no other colour belongs to it. What B sees or C or D (to say nothing of non-human sentients) belongs to it just as much. There is no colour which is *the* colour of the rose at a given moment, as there is a colour

¹ How can any one person know this? By putting himself successively into the places (or the conditions) in which all these different observers are.

which is *the* colour of this patch which I am now sensing. Or if you insist on speaking of 'the colour' of the rose you must mean by this a certain class or series of colours.

A similar reply may be made to a similar objection about *intensity*. How loud is the sound of a waterfall in the unvisited wilds of Labrador? The reply is that what the objector calls 'the sound' of the waterfall is really an infinitely numerous group of sounds each having its own degree of loudness; and these degrees would range from a certain maximum, characteristic of that particular waterfall at that particular moment, all the way down to zero.

These two objections and the replies to them suggest another, which is perhaps the one most commonly urged. Does not the Selective Theory make the world exceedingly complicated? Things appear to grow larger and brighter as we walk towards them, and to alter in their shapes as we move about. The Selective Theory says that all these shapes, sizes and brightnesses persist in our absence, and that the observer's motion merely reveals now one now another of them. This is odd enough. But when we consider the more striking forms of illusion, the result is even odder. The sense-data sensed in the various types of reflection and refraction, in double vision, in after-sensation, and in all kinds of physiological and psychological disorders—all these are real constituents of the external world and quite independent of the minds and bodies of those who sense them. The abnormal state or situation of the observer's organism merely serves to reveal to him what is hidden from other people. For instance, if a drunkard sees double, both of the sense-data which he senses are independent of him and of his organism, and exist when his eyes are shut: but a man is not able to sense the second one unless he first gets his eyes into an unusual state by dosing himself with alcohol or in some other way. Nor must we forget the sense-data of other animals. When the table is present to my senses, I generally see a single brown patch. but the fly probably sees a hundred. Yet the fly's data are just as real as mine, and they persist in its absence, just as mine persist in my absence.

In short, all the sense-data that any one senses from any place at any time in any surroundings, be he healthy or diseased, mad or sane, drunk or sober, insect or man—all these exist in his absence and are real constituents of the material world. Every observer counts for one and nobody for more than one. Thus even the simplest-seeming object will really be an

infinitely multitudinous and infinitely complicated swarm of miscellaneous sensibilia. Surely such a multiplication of entities is monstrous and incredible? Can the world really be so complicated and so chaotic?

This objection sounds formidable, but there is not really much force in it. First, mere oddness can hardly be a difficulty. The material world is an odd place on any theory, and it certainly was not made for the convenience of philosophers. And as for the multiplication of entities, we must remember that it is Nature and not the Selective Theory which is responsible for it. The only multiplication which is objectionable is a multiplication of *assumed* entities. But these 'odd' and 'abnormal' sense-data are there in any case: they are not assumed, but found. They certainly exist, for they are certainly sensed. Their existence is beyond all comparison more certain than any theory can be. You do not get rid of them by calling them 'abnormal' or 'merely subjective'. And one cannot excuse oneself from finding some place for them in one's metaphysical scheme. All the Selectivist does is to say that they exist not only when sensed but also at other times, and to argue by analogy that others like them exist which do not happen to be sensed at all.

Thirdly, with regard to complexity, we must remember that there are at least two distinct ways in which a world, or a conception of the world, can be called simple or complicated: (1) in respect of the number of *entities* in it, (2) in respect of the number of *kinds* of entities in it. In the first respect the world as the Selective Theory conceives it is undoubtedly complicated. But we have just seen that this complexity is innocuous. But in the second respect it is not complicated at all; and in so far, the Selective Theory is the simplest of all theories. For whereas other theories postulate at least two distinct kinds of entities, namely, sense-data and material objects, it postulates only sense-data and says that material objects are composed of them. (Likewise it does not have to postulate a new *relation* of 'belonging to'. It says that 'belonging to' is simply a special case of the old and familiar relation of member to group.)

Fourthly, there is nothing chaotic about these groups. Each group contains an infinitely numerous multitude of members, but this does not mean that the members are not *ordered*.¹ For instance, the infinitely numerous 'perspectified' colour-

¹ Cf. below, Chapter VIII.

patches falling within some one object are united in a continuous series. Between this elliptical patch and that circular one there are infinitely numerous gradations. And the like applies to colour, premency, and other secondary qualities. So too with the dissociated and distorted sense-data of reflection, refraction and so on. They are united with the ordinary perspectified ones by a like gradual transition. And the sense-data characteristic of physiological and psychological disorder can be dealt with in the same way. An observer who had the same disorder in a slightly smaller degree would 'select' a sensible slightly more like the ordinary perspectified one, until as the disorder is reduced he selects one which is only just distinguishable from that. It is true that there are some few hallucinatory sense-data, which are entirely 'wild'. But even they stand in *some* relation with these ordered groups. We can at least say that *if* this colour-patch were a member of an ordinary object, then that object would have such and such a position in space : e.g. it would be between the table-leg and the door.

Thus it is misleading to say (as is commonly done) 'that the theory abolishes the distinction between reality and illusion'. True, in one important respect it makes no distinction between the illusory sense-datum and the ordinary one. It holds that both alike persist outside the somato-centric complex, as unsensed sensibilia. But there may still be extremely important differences within the world of sensibilia. Some are related in one way to their fellow-sensibilia, others in other ways. Some have one status within their object-group, some have another : some are merely perspectified, others are dislocated or distorted ; some are members of no object-group at all. And in certain cases a sensible is such that on sensing it we tend to misconceive the specific character of the object of which it is a member : e.g. we think it is the sort of group commonly called a bent stick whereas in fact it is the sort commonly called a straight stick. In some few cases the sensible, though still perfectly independent of us, is completely 'wild', i.e. belongs to no object-group at all : but we naturally take it to belong to one (for it really is similar in quality to others that do), and this is hallucination. And here the Selective Theory is surely right, in principle at any rate. Whatever the distinction between normal and abnormal sense-data may turn out to be, there is no *special* connexion between abnormality and mind-dependence, or for that matter between normality and mind-independence : so far as depen-

dence or independence on the mind (and the nervous system) are concerned, all sense-data must stand or fall together. The difference between normal and abnormal lies in another dimension altogether: it concerns the relation between this sense-datum and other sense-data. Whether these sense-data do or do not exist as unsensed sensibilia also, is irrelevant.

We must conclude, then, that the objections commonly urged against the Selective Theory can be answered. But it is very difficult to believe seriously that the theory is true, however attractive it appears in the study. And it seems to me that there are two other objections against it which have more force.

One of these is that the theory really proves too much: that by refusing to interpret somato-centricity in a connective way, it in effect denies causal connexion everywhere. The theory admits that in certain respects there is a constant concomitant variation of somatic and environmental data, and that we never find the one sort without the other. And it can hardly deny that the connective interpretation of this is the natural and obvious one. Both the Method of Agreement and the Method of Concomitant Variations concur in suggesting that interpretation. None the less the theory holds that constant compresence and concomitant variation is *not* here a sign of causal connexion direct or indirect. But if so, we must ask, why should it be a sign of causation in other cases either? Why should we not hold that other alleged instances of causal connexion are really only instances of selection? The higher the temperature, the more the metal expands, and we commonly think that the increase of temperature causes the expansion. But why should we not say that the several elongated states *really* coexist with the original state: only the increase of temperature reveals now one and now another to our consciousness? Nor could we save causation by appealing to the Method of Difference. In the absence of the spark, we commonly argue, the powder-magazine does not blow up: when the spark is introduced, all other conditions remaining constant, it does; therefore the spark is at least a part-cause of the explosion. But why should we not take a selective view of this too, and say that really both states of the magazine, the exploded and the unexploded, coexisted all along: and that all the spark does is to reveal the exploded state to our consciousness, and to make the unexploded state (not non-existent but) unobservable by us? In short, whenever A is said to cause B, it could always be suggested that B existed all

along, and A merely revealed it. And in any case we chose to take, all evidence for causal connexion, however strong, could in this way be discredited.

And we could not stop short of a further extension of the selective principle; we should have to hold that there is no *temporal order* except the order of our successive apprehendings. The ordinary view is that every event has what we call 'its place' in an objective temporal order. It is thought that Tuesday's events can only *exist* if Monday's events have existed first. But ought we not to say that Tuesday's events can only be *observed* if Monday's events have first been *observed*—that really they are all contemporary? Thus what we are accustomed to regard as successive events would be in all cases coexistent, and the only successiveness would be that of successive apprehending. And having got so far, we could not avoid a vicious infinite regress. For how could we avoid saying that our seemingly successive apprehendings are themselves really coexistent, and that the real succession is in our apprehendings of these apprehendings? But then there would be the same difficulty about the successiveness of these new apprehendings, and so on *ad inf.* Thus a theory which professes to be the most 'realistic' of all theories ends by making Time itself an illusion.

Now obviously in an argument of this kind everything depends on the first step. If the Selective Theory could show that there is some difference of principle between the somato-centric sort of co-presence and co-variation and all other sorts, it might still be saved. But can it? Of course in so far as my state of *sensing* may be said to be constantly co-present and co-variant with what is sensed—being variously 'directed', now upon this and now upon the other—that is no sign of causal connexion. For sensing (as we are using the term) is a form of apprehension or knowing, and all forms of apprehension are selective. If I apprehend first A and then B, this by itself determines nothing whatever as to the temporal order of A and B themselves. They might even both of them be timeless, as when A is one geometrical theorem and B another. And if they are both sense-data, it still remains possible so far that they really coexist though successively apprehended. For the relation between the apprehended and the mind apprehending is an 'external' relation.¹ But then it is not this relation that

¹ I do not say that the apprehending is a relation between the apprehended and the mind (that problem does not concern us). But at any rate it *entails* a relation between them, and one which is not a relation of dependence.

we are talking of. What concerns us is a relation *within* the apprehended itself, i.e. within the Totum Datum ; and if the first relation is external, it does not follow that the second is. And it is suggested that in fact we have the strongest evidence we could hope for to show that it is *not* external.

It is true that *if* we could see that from their very nature somatic and environmental data could not be mutually dependent, this evidence would go for nothing. Thus if I apprehend an isosceles triangle of a certain height, I can see that the equality of the angles at the base is from its very nature independent of the height, and the height independent of it : and this would still be so, and could be known to be so, even if all other isosceles triangles I ever met with were of that height, while all triangles of other heights had other shapes, and conversely. Such a concomitant variation of height and shape would be held to be 'accidental', however often repeated. But then there is nothing in the nature of, say, colour-patches and kinaesthetic feelings to show that *their* concomitant variation (as we walk about or readjust our eyes) is thus accidental. The conclusion, then, is that if there is *ever* any empirical reason for believing that two entities are connected, then somato-centricity must be interpreted connectively and not selectively : so that the Selective Theory must be false. And since the connexion must extend to all the qualities of all the sense-data within the Totum Datum (for none are exempt from this co-presence and co-variancy) we must also conclude that neither part of it, neither the somatic data nor the environmental, could exist at all apart from the other ; we cannot compromise and say that they continue to exist as sensibilia, but with a change of quality ; i.e. that they are modified but not abolished by leaving the somato-centric complex, and again modified but not created by entering it. Thus the somato-centric *totum* is not only an organic whole, but an organic whole of a very intimate kind.

The other objection concerns the teleological or instrumental character of sense-data. The Selective Theory says that the sense-organs and nervous processes are instrumental, regarding the sensing of sense-data as their 'end' : but the truth is that the sense-data themselves are 'means' to something else, namely, to perceptual consciousness, which would be impossible without them. It seems likely that the *meaningfulness* of the sense-datum, the fact that it is pre-adapted to be taken as belonging to a particular material object, is part of its essential

nature and not a mere accident of it. It is plain, too, that a man's sense-data even adapt themselves in certain cases to his prejudices and prepossessions concerning particular material objects (right or wrong), and that this is a large part of the explanation of hallucinations. This strongly suggests that sense-data, though independent of the mind in respect of *sensing*, are dependent upon it in respect of its *perceptual dispositions*.

Thus the Selective Theory seems to be false. But we must hasten to add that its falsity does nothing to strengthen any form of solipsism or scepticism. So far as the second objection goes, this is obvious : for it is wholly founded upon the fact that we are conscious of matter as well as of sense-data. But it is also true with regard to the first. Though the somato-centric complex is an organic whole, this does not in the least prevent the sense-data in it from belonging to material things, which persist and have their being before and after these sense-data come into existence. And it does not in the least prevent the sense-data from revealing those things to us. It does indeed show that the things cannot be wholly composed of sense-data : but it does not show that sense-data do not stand in an extremely intimate relation to them. It does show that they cannot be permanent constituents of material things. But it does not show that they cannot be temporary and occasional elements in the thing's total being, along with others more permanent ; the fact that they exist only when and so long as certain complicated conditions are fulfilled is no obstacle to this. And it might accordingly be possible to say that the ' total object ' has from time to time such secondary qualities as red or hard or hot, though its persistent and physically operative part does not.¹

We can go farther. The argument against the Selective Theory is not only *compatible* with the existence of material objects accessible to our consciousness, but would have no force whatever without it. For the notions of substance and of causal connexion seem to be so closely bound up that we may almost call them two aspects of one single notion—that of the causative-continuant or continuing-causant. It does not matter here whether this is regarded as a complex continuum of successive events, or as a persisting substrate in which diverse events inhere : the point is only that in some sense or other it retains its identity through time. Unless sense-data belong to

¹ Cf. Chapter X, below.

and somehow reveal to us such persistent yet changing objects—the environmental ones revealing one sort, the somatic another—the compresence and co-variation of sense-data, however often repeated, is nothing but a rather curious phenomenon, a fact as it were of a merely geographical kind, and gives no evidence of causal connexion at all. Thus the very argument which shows that the Totum Datum is an organic whole, shows too that this whole has a *parasitic* and not an autonomous character.

Lastly, if we reject the Selective Theory, we should do so with reluctance. For it lays stress on some important facts which we are liable to forget. Odd, abnormal, and illusory sense-data do not really exist outside the somato-centric complex, as unsensed sensibilia. But within it they certainly do exist. And a theory which fails to find a place for them, by determining their relations to other sense-data, to material things, and to our consciousness of such things, is perfectly worthless. Even the 'wild' ones have their corner in the real universe, humble though it may be. Doubtless they are of no interest to Science (though their causes sometimes are) and of no importance to the practical man. But it is well to remember that the Real includes more than the objects of scientific inquiry and of practical manipulation. And the fact that some of these odd sense-data are met with only in certain forms of mental or bodily disease is a poor reason for not investigating them. For the notions of 'disease' and 'abnormality' are very relative ones: a 'diseased' state of mind or body usually mean no more than a state which makes us inefficient in action. But if our state of practical inefficiency enables us to be aware of new sorts of existents, then so far it is not worse but better than our ordinary state. And if these existents are but short-lived and conditional in their existence, they none the less exist. In Philosophy we must discard our standing prejudices in favour of the practical, the persistent and the efficacious. And this the Selective Theory helps us to do, by treating all sense-data alike whether they are odd or ordinary.

Again, though it is a mistake to say that a material object is wholly composed of sense-data, the mistake is an instructive one. For the fact that the object can be present to the senses of various people in various ways, i.e. that there are various sense-data belonging to it and could in assignable circumstances be various others, is an extremely important fact about it: so important, perhaps, that 'material objectness' cannot be

defined without mention of it. If so, it becomes important to investigate this set of sense-data and the relations between them, and in doing so to consider not only the actual data but also the fact that various others *would* exist if the thing were present to our senses (or other people's) in other ways. These actual and those obtainable sense-data do form a group of a peculiar sort : and until we understand what sort of group it is we shall not be able to say what a material object is, still less to describe our consciousness of such objects. The investigation of such groups (which we shall later call 'families of sense-data') is a puzzling and a complicated task ¹ And in the course of it we may often be able to help ourselves by asking what the Selective Theory would say about the group which according to it *is* the object and about the relations between its members.

On these two grounds we might reasonably maintain that although the Selective Theory is false, a temporary belief in it is the best introduction to the problems of perception.

We may now try to summarize the argument of this chapter. We first saw that there are two main subjects to be considered in this book. 1. the relation of 'belonging to', 2. the nature of 'perceptual consciousness', sometimes (but ambiguously) called 'perceiving'. *Naïve Realism* puts forward a theory on both these points. It is commonly thought to be refuted by the *Argument from Illusion*. This really has two distinct forms, the Phenomenological and the Causal, which are commonly confused. Even when distinguished, they are apt to be stated in an incoherent way, in which the alleged conclusions contradict the premises. Still the Phenomenological form, properly stated, does refute *Naïve Realism*, and the distinction between normal and abnormal sense-data is no answer. The Causal form, however, really proves only somato-centricity; and though on the *connective* interpretation of this the falsity of Naïve Realism would follow, another interpretation is possible, viz the *selective*. And this with its further developments constitutes the *Selective Theory*. According to it a material object is simply a complex group of sensibilia: and it is thus enabled to put forward a new view of 'belonging to' which it identifies with the relation of member to group. This theory deserves very serious consideration, and the ordinary objections to it can fairly easily be met; but there are two others which seem to refute it. Our conclusions are *negatively* that neither Naïve

¹ It is attempted in Chapters VIII and IX below.

Realism nor the Selective Theory is tenable ; and *positively* that sense-data are somato-centric, and further that they exist only within the somato-centric complex. But we have reached no positive conclusion concerning the relation of 'belonging to', nor concerning perceptual consciousness. In subsequent chapters we shall consider other theories about both.

CHAPTER III

SOME MODIFICATIONS OF NAÏVE REALISM

THERE are three ways in which philosophers have attempted to modify the Naïve Realist thesis that visual and tactual sense-data are parts of the surfaces of material objects, so as to make it defensible: and these we must now briefly consider. We may call them respectively the Theory of *Multiple Location*, the Theory of *Compound Things*, and the Theory of *Appearing*. Each of them attempts in its own manner to answer the Phenomenological Argument by saying that in illusion the distorted or dissociated or otherwise errant sense-datum *is* part of the surface of an object but 'with a difference'. But none of them, we shall try to show, succeeds in its attempt.

The Theory of *Multiple Location*¹ says that we must distinguish between the characteristics which characterize something only *from a place*, and those which characterize it *simpliciter*. From a particular place the penny's top surface really is elliptical and smaller than the top surface of a sixpence: but simply,—in itself or from no place—it is circular and twice as large. In this way two sense-data having different shapes and sizes, provided they have them from different places, may both be identical with the same part of the surface of a certain material object (say with the top of it): the one with the top-from-this-place, the other with the top-from-that-place. And the theory could easily be extended to cover at least the simpler cases of reflection and refraction. We could say that from here and in the presence of a mirror the right-hand glove really is situated a long way off from the place which it occupies *simpliciter*, and really does have a surface exactly like that which a left-hand glove from most places has. These 'multiply located' characteristics of an object or of its surface, it would be said, have as little dependence upon the mind as its 'simply located' (or physical) ones. The penny just *is* elliptical from this and that place,

¹ Cf. the works of Professor A. N. Whitehead.

and kinked from such and such others¹: exactly as in itself (and from certain specially favoured places) it is circular and smooth in outline. Thus even the humblest and simplest material object, such as a table or a penny, is really a sort of infinitely various porcupine, which is not merely here in this room (as we commonly take it to be) but sticks out as it were in all sorts of directions and to all sorts of distances, 'from' all of which it has its being and is qualified in various ways, whether present to any one's senses or not. We may maintain if we like that the secondary qualities are all of them multiply located. Thus the thing in so far as it is simply located, i.e. in so far as Science is concerned with it,² would not be red or green or hard. But in so far as it is multiply located, it really will have these qualities. 'The red glow of the sunset', to quote Professor Whitehead, the inventor of the theory, will be 'as much part of nature as the molecules and electric waves by which men of science would explain the phenomenon'.³

This theory combines most easily with the Selective Theory. Thus when I shut my eyes or remove my body from the room, thereby destroying the present somato-centric complex, the top of the table would still continue to be trapeziform from this place, lozenge-shaped from that, while from places within range of the mirror, it will still have an odd shape and situation. A table will be a group of sensibilia as the Selective Theory says, but the distinction between the two sorts of location makes the group much more neat and tidy than we might have expected. For all the sensibilia of the penny, despite the diversity of their multiply-located shapes and sizes, will still fit together to constitute one unbroken simply-located three-dimensional surface.

But the theory is also compatible with the *connective* interpretation of somato-centricity. At most this is only a slight extra complication. Sense-given qualities, such as the brownness and trapeziformity of this patch, will now characterize a part of the table's surface not merely 'from a place', but 'somato-centrally from a place'. From here and somato-centrally, the table-top is trapeziform and brown (though in itself or simply it is square and colourless). But this trapeziformity and this brownness will only be temporary and

¹ Hence the theory is sometimes called Objective Relativism

² According to the Theory of Relativity, certain physical characteristics also would be multiply located.

³ *The Concept of Nature*, p. 29.

occasional; for now they will only qualify the table—even from here—when there are somatic qualities of various sorts to keep them company.

It is evident that this theory contains much truth. There is no doubt that visual sense-data do have their qualities from a place, i.e. from what we call 'a point of view'. It is part of their essence to *face* in a certain direction. Likewise tactual data have their qualities from a 'point of contact' (if we may call it so). It is clear, then, that there is such a thing as 'being qualified from a place'. But is it really clear that one and the same entity can *both* be qualified from a place, *and* be qualified simply or from no place: that it can both be elliptical from here and be circular simply? Or again, can the *same* entity have at the same time an infinite multitude of qualities from an infinite multitude of places? This is not at all clear. It seems much more reasonable to suppose that a colour-patch, or a prement expanse, exists wholly from a place and has no qualities whatever except multiply located ones; certainly there is no evidence that it has any others.

The difficulty is perhaps greatest in the case of double vision. Is it even sense to say that from a certain place something is *doubled*? I think it is not. For 'doubleness' is not a quality at all. *A is doubled* really means *There are two A's*: and even if you add 'from a place', it still means this. Thus when you say that something is doubled you do not mean that it has a new attribute. You mean that there is a new *subject* of attributes. No doubt each of the two sense-data in double vision has its qualities from a place. But there are *two* qualified entities, not one. whereas (by hypothesis) there is only one piece of matter.

If all this is so, the 'from-hereness' of a sense-datum's brownness and trapeziformity will not suffice to make the sense-datum *identical* with a surface which is square (and perhaps colourless). It will just be a new and very interesting fact about the sense-datum. Of course the trapeziform sense-datum can still be very intimately *related* with the square surface. But so it could have been, even apart from its 'from-hereness'. And no doubt there may be a whole including both the simply-located square object and the complete set of multiply-located sense-data which belong to it. And since it includes both types of entities, we could say that it does in a manner possess both types of location. But then the very existence of such a whole is still a problem. Unless we *first*

investigate the relation of belonging to and the nature of perceptual consciousness, we are not in a position to say whether there are such wholes or not, still less what sort of constitution they have. Thus the objection to the theory on this head is not that it is false, but that it attempts to short-circuit the whole inquiry by just assuming that a number of problems have been solved already: problems which it does not even state.

We may add that the theory is in great difficulties over the 'wild' sense-data of complete hallucination. The visionary figure of complete hallucination—is this a material object whose surface from the place where I am possesses this and that curious quality? But is there really any such object at all? Certainly there is no further evidence for its existence. (If there were, there would not be any hallucination.) 'It is a *past* object, say one which existed in your childhood, and it can have qualities not only from a place but also from a time at which it (physically) is not.' Here at best we have the same difficulties as in ordinary illusion, only in a more complicated form. But what about cases where so far as we know there never was such a material object? Will it be said that there are a number of past objects, bits of which are from this place and this present time combined into one? But that seems to mean that there is not only a *quality*, but a *subject* of qualities which exists only from a time and place. For it is really being said not that a number of objects have this quality, but that there is one object which has them. But by hypothesis the past objects were not one, but many. This alleged one object, then, is something new, which never really existed in the past at all. In fact it is not a material object, nor any part of one, but just a wild sense-datum, which is in no way part of any object at all—and which Naïve Realism, however modified, can never make room for. (This is the converse of the difficulty about doubleness noted above.)

Thus the Multiple Location Theory, though we owe to it a very important idea, seems to raise more difficulties than it solves; and certainly it does not save Naïve Realism. The other two theories are subject to analogous objections, and to some others peculiar to themselves. We shall deal with them more briefly.

The *Theory of Compound Things* says that the illusory visual and tactual sense-data, to which the Phenomenological Argument appeals, do really in each case form parts of the sur-

face of an object, but of a *compound* object.¹ The stick is not bent, but the compound stick-plus-water really is bent, and the crooked sense-datum is part of its surface. These compound objects really do exist in external Nature and do have their qualities (which differ from those of their constituents taken singly) just as 'simple' objects like sticks have theirs.

Now I do not think that it is really possible to keep the sense-organs and brain of the observer out of the compound, though Professor Alexander, the inventor of the theory, wants to make it purely selective. For if a refractive agent like water can be part of a compound object, so can the spectacles on my nose: and if the spectacles, then the lens of the eye and if that, then the optic nerve and brain. Now the sense-organs and the nervous system cannot be got rid of, as the spectacles or the water can so that *all* the objects to which our sense-data belong will on this theory have to be 'compound', only some will be more complicated compounds than others. And if so, it will not be easy to discover what simple objects there are and what qualities they have: how, for instance, should we ever know of the existence of such 'simple' things as straight sticks, mountains or tables? And of course there will be the same difficulty about our knowledge of our own sense-organs and brains.

But secondly, this theory does not really save Naïve Realism. For even if we interpret it selectively no one can seriously contend that the crooked colour-expanse which I sense is *part of the surface* of the compound object stick-plus-water, in that literal sense in which, if there were a bent stick, it could be part of the surface of *that*. The surface of the compound—if it can be said to have one at all—must be the surface of the upper half of the stick plus the top surface of the water. Now the upper half of the sense-datum might be part of the surface of the upper half of the stick. But what of the lower half of the sense-datum? (The trouble is in any case about the lower half.) *That* ought presumably to be part of the surface of the water. But obviously it is not: this indeed is what is meant by saying that in such a case we 'see through'

¹ Cf Professor S. Alexander's *Space, Time and Destiny*, vol. ii, pp 183 *et seq*. I am not sure whether Professor Alexander means that these sense-data (which he calls 'mere appearances' as opposed to 'real appearances') are *parts of the surfaces* of compound objects, or merely *somehow constituents* of compound objects. If the second, his theory does nothing to rescue the Naïve Realist account of 'belonging to'.

the water. We can best describe its nature and situation by saying that it is exactly what it would be if it were part of the surface of the lower half of a crooked and slightly shorter stick. Indeed if the crooked sense-datum were really part of the surface of the compound, we should never dream of saying '*the stick looks bent*'.

And further, the intervening air must be included in the compound, even if the eye and nervous system are not. Now it is extremely hard to see how the complex stick-plus-water-plus-air could be said to have a surface at all. But if it did, then certainly the sense-datum would not be a part of it.

This *one-sidedness* of the compound object, this fact that the sense-datum insists on attaching itself to one portion of the compound in preference to the rest, comes out more clearly in another instance of Professor Alexander's; that of the green mountain which as we say looks purple from a distance. This purpleness, it is said, does really qualify the compound mountain-plus-intervening-atmosphere, though not the mountain alone, and this means that the purple sense-datum really is part of the surface of the compound. (In the language of the theory, it is a 'real appearance' of the compound, though a 'mere appearance' of the mountain.) But is this really so? If the purple sense-datum is anywhere in the material world at all—which some would doubt—then I suppose we must say it is situated on a plane somewhere near the mountain, but a little in front of it, allowing for the 'collapse of planes' due to distance. And this is certainly not the surface *of the compound*. the surface of that, if indeed it has one, would presumably be the place at which the air touches the observer's eye. For that, I suppose, is the boundary of the compound. Or is it the back boundary of the compound that the sense-datum is to be situated on, i.e. the place at which the air touches the mountain? But this alternative will not fit the facts either, apart from its intrinsic oddness.¹ For owing to collapse of planes, the sense-datum is in front of the mountain, if it is anywhere in the material world at all.

The theory would be much more plausible if it said that the purple sense-datum is part of the surface not of mountain-plus-atmosphere but of mountain-through-atmosphere. For whereas it is very odd to say that a mountain 'plus' ten miles of air is (collectively) purple, it is not nearly so odd to say that a

¹ The oddness lies in the fact that we should then be seeing the compound *from the inside*.

mountain 'through' ten miles of air is (singly) purple: so too with the stick in the water, the face in the mirror, etc. But then if this were said, we should simply have come back to the Multiple Location Theory.

Further, in what sense can we really say that there are these compound objects at all? (Of course there are compound objects in the world, e.g. organisms, but I am speaking of compounds of this particular sort.) What the theory builds upon is presumably the fact that when the stick is present to my senses, there are several objects—stick, water, air—upon which the sense-datum is *causally dependent*, and that these objects are causally related to one another. But does this suffice to make them one compound object? If so, it ought surely to be possible to point to at least one attribute possessed by all of them in common and not by any of them in isolation—for instance, a characteristic shape or mass or inertia, or some such causal property as serves to distinguish a chemical compound from other compounds and from its own constituents. Without this there is simply a group of causally related objects, not a compound. But no such attribute can be found. It seems, then, that apart from the theory itself there is no independent evidence for the existence of any such compound. It is only a sort of towel-horse postulated *ad hoc*, to hang an inconvenient sense-datum upon.

Lastly, even if all these objections could be overcome, even if there certainly were these compound entities, and even if these sense-data were certainly parts of their surfaces, still the Naïve Realist conception of 'belonging to' would not have been saved: it would have been replaced. For the Naïve Realist is not thinking of these compound objects at all. The objects *he* is thinking of, and which he asserts visual and tactual sense-data to be parts of the surfaces of, are *ordinary* objects, e.g. the stick, the mountain or the tree—what the theory calls 'simple' objects.

The *Theory of Appearing*¹ starts from such common-sense statements as 'The tree looks small and purplish to you, but it looks large and green to me', 'The stone feels heavy to me though it feels light to you', and so on. The generic notion

¹ Cf. Professor H. A. Prichard's *Kant's Theory of Knowledge*, ch. 4. Also Professor G. E. Moore, *Philosophical Studies*, pp 243-7 (where, however, the word 'seem' is used instead of 'appear'). Both have, I think, abandoned the theory since.

of which 'to look', 'to feel', 'to sound' (in this intransitive sense of them) are species, is *to appear*. And the theory holds that a visual or tactual sense-datum is always a part of an object's surface appearing to some one to have certain characteristics. On one form of the theory 'appearing' is the name of a unique and unanalysable *three-term-relation* between a part of an object's surface, a characteristic or set of characteristics, and a certain mind. On another form of it, 'A appears *b* to Smith' stands for a unique and unanalysable kind of *fact* about A, *b*-ness and Smith's mind, but this fact is not of a relational sort.

Now the same top surface of a certain penny stamp may appear to me pink and to a colour-blind man grey, to me lozenge-shaped and to him trapeziform, while in itself it is square and (perhaps) colourless. Of course the same entity cannot *be* at once red and grey and colourless, trapeziform, lozenge-shaped and square. But then it does not have to be. For though *being* trapeziform is incompatible with being lozenge-shaped, yet appearing trapeziform to A is perfectly compatible with appearing lozenge-shaped to B—and with being intrinsically square. So, too, appearing grey to B is compatible both with appearing pink to A and with being intrinsically colourless.

Accepting this without criticism for the moment, let us ask how far it will carry us. Obviously, ordinary perspectified sense-data will now cause no trouble: we can say that they are all parts of the surface of one single material object. And simple cases of refraction, e.g. that of the stick in the water, can be dealt with. But as soon as we turn to *dissociated* sense-data whether of refraction or of reflection the theory begins to fail us. 'But could we not say, The glove appears to Jones to be over there and right-handed, though in itself it is here and left-handed?' Yet it is noticeable that with the predicate 'over there' we are obliged to say that the glove appears *to be* over there: we cannot say just 'appears over there' (still less 'looks over there') as we can say 'looks green'. And this warns us that the disease of apparency is attacking the subject of our proposition as well as the predicate. For our real meaning now is '*there appears to be* a glove over there'—as indeed we should often say.

This transition from Qualitative Appearing to Existential Appearing (if we may so express it) becomes still more obvious in the case of double vision. It is not really sense to say

'To me the candle appears double'. 'Red' and 'elliptical' are predicates: but, as we saw above, 'double' is not really a predicate at all. The use of it really signifies *that there is a second subject of predicates* in addition to the first. If the word 'appear' is to be used at all, the proper statement is '*There appears to me to be a second candle beside the first*'. Now this is an utterly different sense of the word 'appear'. One cannot now say that there is a characteristic, a mind and a part of an object's surface, related by a unique three-term relation (or that there is an unanalysable and unique kind of non-relational fact about all three of them). For there is really no second object at all. There is only the first candle: we take it that another exists, but it does not. Thus it will have to be admitted that what stands in this unique kind of relation (or enters into this unique kind of non-relational fact) is *just a sense-datum*: and that though some sense-data may be parts of the surfaces of objects, some certainly are not. So Naïve Realism is, after all, still false. The same account will apply *a fortiori* to the 'wild' sense-data of complete hallucination where the sense-datum is not only dissociated from a particular material object, but belongs in no way to any material object at all.

Thus the theory will not in any case save Naïve Realism. But even apart from this its own foundations are incoherent. Let us now turn back to its fundamental expression 'A appears *b* to So-and-So' which we allowed to pass without criticism, and ask what meaning can be given to it. Clearly if A is the name of a material object such as a table, it does mean something. But equally clearly, that meaning is further analysable. When I say 'This table appears brown to me' it is quite plain that I am acquainted with an actual instance of brownness (or equally plainly with a pair of instances when I see double). This cannot indeed be proved, but it is absolutely evident and indubitable. But I am not acquainted with an actual instance of tableness, though of course it may be that there is one. Thus the natural way of restating the original sentence 'This table appears brown to me' is 'I am acquainted with something which *actually is* brown (viz. a sense-datum) and I believe that there is a table to which this something is intimately related (viz. belongs to)'. In this new statement, which says clearly what was obscurely said in the first, the word 'appears' has dropped out.

Again, there is a further reason why the statement 'This

object appears brown to me' cannot state an ultimate and unanalysable fact, namely, that two quite distinct mental attitudes are involved. We cannot on reflection doubt that there exists an instance of brownness. But we can on reflection doubt the existence of the table; we can even doubt whether there is any material object now present to our senses at all. Thus when I say 'This object appears brown to me' I am in two distinct mental attitudes: one is a form of knowing, and the other is a form of belief, or rather of taking-for-granted. Therefore if we are to use the language of relations here at all there must be *two* relations in which the mind stands, not just one unanalysable relation: the first, a relation of acquaintance to the actual instance of brownness; the second, a relation of belief—which is, I suppose, a relation not to the material object (for there may be none) but to objectness. If we prefer the other language, there is not one single unanalysable fact of a unique sort, but two facts of a familiar sort, the fact that I am acquainted with a sense-datum, and the fact that I believe the object to exist.

Let us now suppose that in the formula 'A appears *b* to So-and-So' A stands not for a material object but for a sense-datum. It seems to me that the formula is now self-contradictory. For if something appears brown and square to some one, *ex hypothesi* it is possible that in itself it is *not* brown or square. But if I am acquainted with something which now actually exemplifies brownness and squareness, then it is not possible that it is not now brown and square. It is possible that it may not be square the next minute, and may not even exist then: it is possible that something else in some respects like it (e.g. another colour-patch) may not have the qualities that it has. But *this* something actually does now exemplify brownness and squareness. The notion of appearing, then, since it implies that the something which appears qualified in a certain way may none the less *really* be qualified in a contradictory way, has no application to sense-data. And any one who pretends that it has is really meaning to say that there are no sense-data. But this can only be said through some misunderstanding.¹ For we *are* acquainted with particular instances of redness, roundness, hardness and the like, and such instances of such universals are what one means by the term sense-data. Perhaps some other term would be

¹ Cf. the warnings given on pp 18–19 above, where the term *sense-datum* was shown to be a 'neutral' term.

better : certainly no term is perfect. If so, let us dispute about it by all means and discover a better if we can. But about the actuality of that which the term stands for, there can be no dispute.

It seems to me that this application of the notion of appearing to sense-data (as distinct from objects) is only made plausible—in so far as it is even plausible—by two things : (1) by the hope of saving Naïve Realism : which in view of the difficulties of dissociated and wild sense-data cannot be done even by the other, and defensible, application ; (2) by a confusion between two senses of the word 'appear' itself. For it is just possible that 'A appears *b*' might be taken to mean 'A *sensibly manifests* the quality *b*-ness'. But then in *this* sense of 'appear', if A appears brown it really *is* brown and I know it is. But secondly 'A appears *b*' might mean 'A *seems* to be *b*', i.e. is unreflectively taken by some mind to be *b*. And this of course *is* compatible with its not being really *b*. But then in this second sense, the formula is not applicable to sense-data and their sense-given qualities at all. Where A stands for a colour-patch which I am acquainted with and *b* for its redness, I do not and cannot *take* A to be *b* at all. I am just immediately aware of an actual instance of *b*-ness : and this makes the 'taking' it to be *b* both unnecessary and impossible.

CHAPTER IV

THE CAUSAL THEORY

IN this chapter we shall return to our two main themes, namely, the relation of 'belonging to', and the nature of perceptual consciousness. We saw that the long struggle to defend Naïve Realism finally failed, despite the ingenuity of the defenders. The Naïve Realist, we may recall, maintained two theses: (1) that in the case of visual and tactual sense-data 'belonging to' means 'being part of the surface of'; (2) that perceptual consciousness is knowing that a sense-datum is part of the surface of a material thing. Both theses have turned out to be untenable. We have now to consider a radically different but equally familiar theory which maintains (1) that in the case of all sense-data (not merely visual and tactual) 'belonging to' simply means *being caused by*, so that 'M is present to my senses' will be equivalent to 'M causes a sense-datum with which I am acquainted'; (2) that perceptual consciousness is fundamentally an *inference* from effect to cause.

This theory corresponds pretty closely to the traditional doctrine of Representative Ideas, but with two differences. It is not committed to the view that sense-data are *mental*, i.e. are 'ideas' (they might be neither mental nor physical); and it is not committed to the view that visual and tactual sense-data *resemble* the material things which they belong to, though of course they might happen to do so. These differences do not seem very important. The old-fashioned Representationists when they used the term 'idea' were probably more anxious to deny, as against Naïve Realism, that sense-data are physical, than to assert that they are mental: what they wanted to assert was rather that we are immediately aware of them. And when they said that ideas 'represent' the material world, they plainly meant that the having of ideas enables us to gain *knowledge* or rational belief concerning the existence and nature of that world, and some indeed actually said that we gain it by a causal argument; they

did not merely mean that the ideas happen as a matter of fact to resemble material things, as a man's shadow resembles the man.

But although the theory which we are to consider is an old one, it is by no means dead ; indeed to this day it might be called the official foundation of Natural Science. The usual name for it, and the most convenient, is the *Causal Theory*. Unfortunately some writers mean by this simply the ordinary physico-physiological account of the way in which sense-data are as a matter of fact generated, by the action of other material things upon the sense-organs and nervous systems of sentient beings. That, however, is merely a *part* of Natural Science and has no claim to be the foundation of it. Like all other parts of Natural Science it is based upon observation, in this case observation of lenses, retinae, ears, brains and the like ; but it is not a theory of what observation itself is, which is the question which concerns us as philosophers. The only sort of Causal Theory which is of philosophical importance is one which discusses *this* question : and the theory that belonging to M is the same as being caused by M, and that perceptual consciousness is an inference from effect to cause, does discuss it. This, then, is what we in this book shall always mean by 'the Causal Theory'.

Before we expound the theory in detail, we must consider certain preliminary difficulties. In the first place it is obvious that we are not ordinarily conscious of making any inference at all when we see a table or a chair or a tree : and this might seem to be already a fatal objection to the theory. But several answers are offered. The theory may say, with Helmholtz and others, ' You do infer but you are not conscious ¹ of inferring, because you do it so quickly and without any effort '. This will not do. If we are not conscious of inferring, what evidence is there that we do infer at all ? And if it be replied ' Of course you do, for all consciousness of matter must be inferential ', we must point out that this begs the question.

A more plausible suggestion is that although we do not in fact infer the existence of the table, yet we ought to. It is said that the proposition ' This is a square table ' though not *reached* by inference can only be *justified* by inference. But this, too, seems difficult. The sense-data given to us are not all square, indeed very few of them are. And yet we are con-

¹ I take it that an ' unconscious ' inference means an inference which we are not conscious of.

vinced that the table is square. Evidently some process of correction or sifting has been going on. And this suggests that our conviction of the existence and squareness of the table may not after all require *external* justification at all. If only we would examine the sensings and acts of perceptual consciousness which immediately precede the occurrence of this conviction, might we not find that it was in some way already justified by these and needed no inference to support it? It is certain that no one except a few philosophers has ever thought that such support was needed, or offered to supply it.

This odd duality of two processes—one inevitable but irrational, the other rational but never or all but never occurring—is avoided by the third and most plausible answer to our difficulty. According to this, I have *in the past* inferred material objects from sense-data by causal arguments; in early childhood I always did so. And this has enabled me to establish the inductive generalization that wherever such and such a kind of sense-datum exists, such and such a kind of object exists too. (Indeed, the establishing of this generalization would be the chief occupation of the infant mind upon this view.) Once having established it, I proceed henceforth to apply it in a mechanical way to all my sense-data as they come along, without thinking any more about the grounds upon which it is based, and without troubling to verify it in each new case, by going through the whole causal argument again. The result is that I do not now as a rule have any consciousness of the causal relation subsisting between this sense-datum and this material object. The sense-data have come to be to me *signs* of the objects, and I 'read' my sense-data much as I read a book. Still, my present power of reading the signs depends upon a long course of causal inferences in the past. And even now, it would be said, I do occasionally infer an object from my sense-data by a causal inference, e.g. when I correct an illusion, or when I consider¹ whether such and such a sense-datum is illusory or not.

Thus by this account the process is a perfectly rational one, resulting not indeed in knowledge but in rational belief. Something very like it occurs even in arithmetical and geometrical thinking. For instance, if we find a right-angled triangle we straightway take it that the square on the hypotenuse is equal to the sum of the squares on the other two

¹ 'Considering' obviously consists of hypothetical and disjunctive reasoning, or at least contains it as an essential part.

sides, without going through Pythagoras's Theorem again every time. The only difference is that the major premise is here not an inductive generalization, whereas in our case it is. And this difference is not here important.

Further, we may urge that this 'mechanically' subsumptive procedure is all the more natural, the more complicated the original inferences upon which our general rule was founded. And we must now point out that in the present case they must have been very complicated indeed. No *simple* causal argument which could be gone through again every time without trouble will take us from a sense-datum to a material thing.

For instance, it cannot be said that the table is *the* cause of the sense-data which 'belong to' it. On the one hand, why should we go so far back? Why not say that the light rays are the cause of the sense-datum—or the retina, or the brain, or even (perhaps) the mind? All these have just as good a right to be called 'the' cause of it as the table has—that is, neither they nor the table have any right at all. But on the other hand, why not go farther back still? Why stop at the table? The electric light, the wires conveying the current, the dynamo which generates it—all these are just as necessary to the genesis of the sense-datum as the table itself is. And we should come back at last to the prehistoric coal forests, to the sun, or even to the original nebula.

The material thing, then, is not *the* cause of the sense-datum which belongs to it. Are we to say, then, that the sense-datum belongs to the brain, the eyes, the dynamo, the sun, no less than to the table? But this would be absurd. For we have used the phrase 'belonging to' in a special meaning: a visual sense-datum *s* belongs to a material thing *M* when *M* is present to the senses of the mind which is acquainted with *s*, that is, when the plain man on sensing *s* would say 'I am seeing *M*'. But no one would say in the present case that he was *seeing* the sun or a dynamo, still less that he was seeing his own eye or brain. He would say he was seeing a table. It is to the table then, and to nothing else, that the sense-datum belongs. But it is causally dependent upon an indefinitely large multitude of things. How then can 'belonging to' be defined in terms of causal dependence? The Causal Theory seems to have met with disaster before it has well started. And with that, many philosophers will be tempted to leave the matter.

But I fear that we cannot rid ourselves of the theory so easily, though we may fairly complain of the lax and off-hand way in which it has often been expounded. A simple distinction between *standing* and *differential* conditions will get over the difficulty. There are certain conditions which condition *all* the sense-data of any one sense, conditions in the absence of which none of them can come into being: in the case of visual sense-data, there must be a source of light, an eye, a retina, an optic nerve, etc., and these must be in a certain state. There must also be a diaphanous medium. But these standing conditions, just because they are necessary to all the visual sense-data alike, do not wholly determine any one of them. For that, something more is wanted, a varying or differential condition which accounts for the difference between this red sense-datum and that blue one, between this square one and that elliptical one. Obviously it is absurd to identify M with any or all of the standing conditions of *s*: but it is quite plausible to identify it with the *differential* condition of *s*. And clearly this is what the Causal Theory intends to do.

We may now sum up our discussion so far. What the Causal Theory maintains is that *given s, it is possible to infer the existence of M as s's differential condition*. On this we may note:

(1) M must be the differential condition of *s*, not just any sort of condition.

(2) Nor must it merely be so as a matter of fact. The relation of differential conditioning must be so apprehensible by us that we can pass by means of it from the apprehension of *s* to the apprehension of M.

(3) Yet this need not actually occur, and in an adult mind at least is not necessary to the *belief* in M's existence, though it is to the *knowledge* of M.

Our next task is to enquire what sort of argument it is by which (according to the Causal Theory) O can be inferred from *s* as its differential condition? One well-known account represents the argument as follows: Every event has a cause, and every sense-datum is an event. It must, then, have a cause. Its cause must either be myself or something else. But it cannot be myself, for sense-data are independent of my will. As Berkeley says: 'When I open my eyes in broad daylight it is not in my power to choose what I shall see.' Sense-data must therefore be caused by events in something other than myself.

If this is the argument, it is perfectly valueless as it stands. First, why should not sense-data be caused *by other sense-data*? We have no direct insight into causal laws. Now it seems plausible to say that sense-data are events¹; and there must on any view be *some* type of events 'beyond which you cannot go', events such that the causal relations subsisting between them are ultimate and cannot be explained, i.e. deduced from some combination of the causal laws governing other events. If this were not so, there would be an infinite regress, and explanation would never be possible. Why should not these events beyond which you cannot go be simply sense-data themselves; or again certain special sorts of sense-data, say visual and tactual ones? And until one has explored this possibility, what right has one to go behind sense-data to something else, whether to the mind or to a so-called external object?

Secondly, independence of my will in any case proves nothing. For it is quite compatible with dependence on myself, as any dream or hallucination shows. Sense-data might well be caused by psychical processes in me which had nothing to do with my will, and which were even beyond the reach of introspection.

These objections are fatal to the argument as it stands. Let us try to amend it. For 'independent of my will' let us substitute 'independent of known psychical processes in myself'. We can then answer the second objection. For the example of dreams and hallucinations can now be used on the other side. If psychologists are to be believed, a connexion can actually be found between my dreams and certain known states of myself: say my desires, my memories, my interests. The same is true of hallucinations. But is it true of ordinary sense-data? Will any introspection or any psycho-analytical technique enable us to predict what we shall see half an hour hence? 'Memory will help.' It will, but only when the situation is familiar, and some are not. And memory of what? Clearly only memory of past sense-data—which raises the same problem over again. On the other hand, I see the moon rise and the clouds come and go whether I am glad or sorry, reminiscent or expectant. No change in any recognizable state of myself seems to affect the differential conditions of those sense-data, though it may well be true that the standing conditions are partly in myself.

¹ Cf. below, Chapter V.

But after all it is possible that there are states and processes in yourself which are beyond the reach of introspection and of psycho-analytical technique, and these may produce your sense-data.' The reply is obvious. By what right can any one say that they are *in myself*? If they are independent of everything which I call myself, to say that they are states and processes *in me* is merely playing with words: or if you will, it is splitting 'me' into two parts—one familiar part and another utterly alien part, having no connexion with the first. That second part should not be called 'me'; for it is exactly what is ordinarily called external.

We may now go back to the first objection, that sense-data may be caused by other sense-data. Here the traditional argument is not exactly in error: it has only omitted the essential point. If we were *omnisentient* beings, i.e. if we were able to sense all at once all the sense-data which can ever be sensed by every sentient human or non-human; and if this all-inclusive sensing were never interrupted by sleep or inattention: then, but only then, it would be plausible to suggest that sense-data might be caused by other sense-data, for then but not otherwise the sense-data would suffice by themselves to constitute an orderly and coherent world.

But unfortunately, though some idealist philosophers seem unaware of it, our situation is very different. Every drowsy nod, every turn of the head, every blink, would destroy the order of Nature if Nature consisted simply of *our* sense-data. Even the simplest laws, e.g. that all unsupported bodies fall, cannot be stated in terms of our sense-data alone. Those innocent persons who think that they can be, are either importing possible sense-data to supplement the actual ones, or they are tacitly assuming an omnisentient observer. I am not seeing the walls of the room below, which support this room in which I sit. Yet I do see this room, and it does not fall to the ground. The clothes in the distant back-yard hang in the air, though from here I can see no string for them to hang on. Again, when the motor-car is moving, I do not and cannot see the explosion in the cylinder. Here are effects without causes, if we insist upon stating causal laws in terms of sense-data alone. And again we have causes without effects. I drop a pencil from my window on a dark night. This should cause it to fall. But I never see it fall. No sense-datum of the required kind succeeds upon the kinaesthetic or tactual sense-datum which (upon this view) is the dropping.

It may be said that sense-data of the required kind *could* have existed in all these cases. But how do we know that they could? Either because we already know that something else exists other than sense-data, and further know the way in which that something changes, and what sort of sense-data belong to it. Or if not that, one must mean by 'causal laws' something very odd—one must mean laws connecting 'possibilities of sensation'. No doubt there are such laws. But still these possibilities are certainly not sense-data: a possibility cannot be red or round, large or small, hard or soft or smelly. But it was in terms of entities red, round, hard, soft, etc., that causal laws were to be stated, when it was said that sense-data might be caused by sense-data, and that there was no need to look for their causes in some other sphere of being, lying outside sense-data altogether.

Considerations of this kind constitute what we may call the *argument for unsensed causes*: they show that if every event has a cause and if our sense-data, or again if their comings-into-being, are events, then something else must exist besides our sense-data. This argument is the only plausible basis for the Causal Theory, though few advocates of the theory, I think, have used it. We must insist once more that it depends entirely upon the fragmentary and intermittent character of our sense-data. Thanks to this, our sense-data *taken by themselves* are chaotic and disorderly, and we have therefore to call in a new world to redress the balance of the old; or rather, to make it a world at all, instead of a chaos, we have to supplement it by something else. But were we omniscient the argument would have no force whatever: even though our sense-data had in fact unsensed causes, we should then have had no grounds for thinking that they had. Berkeley's God has no ground for believing that Nature consists of anything but actual sense-data; but Berkeley has plenty.

But as to the *character* of this something other than sense-data, the argument so far tells us nothing: only (as we have shown) it cannot be ourselves. So far as we have yet gone, we can only say it is something or other distinct from ourselves. We cannot even say whether it is one or many. It might quite well be a mind, so long as it is distinct from *our* minds; it might be a set of minds, or something extended in space, or none of these.

However, various lines of thought may be suggested all of which purport to answer these questions, by showing that the causes of which sense-data are the intermittent and

collateral effects are *material things*, extended in space and enduring through time, and having such causal properties as Natural Science attributes to them. We may call them the *Method of Correspondence*, the *Method of Discounting*, the *Method of Sources*, the *Method of Indispensables* and the *Method of Hypothesis*.¹ These methods, with the argument for unsensed causes upon which they are all based, constitute the detailed content of the Causal Theory. We shall now examine them one by one. We hope to show that none of them, as a matter of fact, succeeds in establishing the existence of matter; and we shall then urge that all attempts to establish this by causal arguments are mistaken in principle. But we must ask the reader to be patient. We cannot reach this conclusion unless we first expound the Methods in full detail. And we shall try to make out as good a case as possible for each of them.

THE METHOD OF CORRESPONDENCE

The principle of this was adumbrated by Descartes when he laid down that there must be at least as much 'reality' in the cause as in the effect, i.e. at least as many positive attributes.² There must be a cause not merely for the existence of sense-data in general, but for all the particular detail of all the sense-data which we actually sense. It follows that *wherever we find differences in the sense-data, there must be differences in the cause*. For instance, the data of sight differ from those of touch, and both differ from those of smell, and so on. To these differences there must *correspond* some differences in the cause or causes of the sense-data. We need not indeed suppose that to every qualitative difference in the sphere of sense-data there corresponds a *qualitative* difference in the Non-sensible. The corresponding difference might be a difference between relational characteristics. But still, it will be said, there has to be some corresponding difference or other.

But the main task of the Method is to show that there are *spatial* and *temporal* differences within the Non-sensible. If there are not, it cannot be called material (or physical) in any natural sense. To say that visual and tactual sense-data are extended (being 'extents' or 'expanses'),³ and that only the extended can cause the extended, would however be too simple, for visual images and the data of dreams are extended,

¹ Cf. the ethical 'methods' examined by Sidgwick

² Cf. also Mr. Russell's *Analysis of Matter*. ³ Cf. Chapter V, p. 110 & 111.

but they are commonly held to be caused by the mind which is not. But it is claimed that there is another way of establishing the required conclusion.

Let us consider any field of view, such as the one we see at this moment. Obviously it has *parts*. Here, for instance, is a triangular white patch, there a square red one. And corresponding to each part there must be something in the Non-sensible to cause it. Again each individual patch has parts, e g a top half and a bottom half. Corresponding to these again there must be distinct factors in the Non-sensible. And in each of these distinct factors there must be further distinctions, corresponding to the parts of these parts, and so on.

Further, not only the diversity of the parts, but their *mode of relation* to each other must be accounted for. The parts of the sense-field are related in a three-dimensional order in the ways we call up and down, right and left, near and far. There must then be a corresponding mode of relation among the diverse factors in the Non-sensible. The diverse factors in the Non-sensible must in any case be ordered in some way. And it now turns out that their order, whatever its particular nature may be, must at any rate have three dimensions. Likewise there are relations of earlier and later between sense-data, and these relations are independent of the other three. There must then be still another mode of relation in the Non-sensible to account for this.

So far, the Method of Correspondence claims to have shown two things. (1) that there is a *plurality of factors* in the Non-sensible, (2) that they are related to each other *in an order having at least four dimensions*. (By 'having four dimensions' is meant that in this ordered manifold there are to be found four distinct and mutually irreducible types of relatedness. They are mutually irreducible in this sense, that from the fact that B stands between A and C in respect of relation No. 1, you cannot infer what it stands between in respect of relations 2, 3 and 4.)

The Method now goes one step further, and claims to prove that these diverse factors have a certain *independence* of each other. For we observe that one part of a sense-field can change although other parts do not. indeed this happens whenever (as we say) we see something move. Again, when we see something break (which is really a form of motion) we observe that within the sense-field one part which formerly changed as a whole has been replaced by two or more smaller parts, each of which has for the future its own separate career,

and changes independently of the others. (Likewise mutual *dependence* in the sphere of sense-data signifies mutual dependence in the Non-sensible.)

And if it be objected that sense-data are not substances and therefore cannot change, the point will be re-stated as follows: During a certain period of sense-experiencing we sense not one series of sense-data, but several concurrent series. And these series are not merely spatially separate; they are also what we may call causally separate, in that each 'goes its own way' independent of the others. From the fact that the successive members of one series A are dissimilar to one another in a certain respect (say, position in the field of view), we cannot infer that the members of a certain other series B differ from each other either in that respect, or in any respect at all—they may all be exactly alike. Thus when a man smoking a pipe sees a mouse run across the floor of his room, the successive sense-data which belong to the mouse differ from each other in colour, position and size. But the successive sense-data which belong to the table during that period do not differ from each other at all. And the smoker's kinaesthetic sense-data (the felt puffs) do indeed differ from each other in a rhythmic way, but these differences are not correlated in any discernible manner with the differences between the successive mouse-data.

To sum up: these considerations, and obviously they could be further elaborated, are supposed to prove that in the Non-sensible something (upon which the existence of our *sensa* depends) there is a *plurality* of factors *relatively independent* of each other, and related in an order *having at least four dimensions*. And this, it is urged, is the same as saying that the Non-sensible something is a *world of bodies in space and time*, a world which is at least as complex as common sense supposes, and may be more so.

THE METHOD OF DISCOUNTING

We have seen that each characteristic of the sense-given has its correlate in the Non-sensible; we have also seen that concomitant variation on the side of the sense-given is correlated with dependence or connexion on the side of the Non-sensible: non-concomitant variation, with independence.

We have now to apply these principles to the particular case of the relation between somatic and non-somatic sense-data.

We have already seen that all sense-experience is somato-centric (or kinaestheto-centric): in all our sense-experience somatic and non-somatic data are present together and vary together. And we were obliged to conclude from this that the coloured surfaces we see, the pressures we feel, etc., cannot continue to exist when their somatic accompaniments are removed, e.g. when our back is turned or when we are out of the room.

But although no visual data exist when our back is turned, certain non-sensible somethings do and must, if the argument for unsensed causes be right. The question is, can we now determine the particular nature of these somethings? Obviously we must begin by inquiring into the nature of the something or somethings which are present when we *are* in the room: we can then hope to discover what difference is made to them by our removal.

It is clear that what we have called somato-centricity must have as its correlate a relation of compresence and connexion (or dependence) on the side of the Non-sensible. But we have now to observe that somato-centricity has its limits. In many respects the non-somatic data vary concomitantly with the somatic data, but not in all; in some respects the non-somatic is *independent* of the somatic.

In what respects independent? Not in respect of qualities, e.g. colour, shape, hardness, hotness; nor in respect of intensity, size or sensible position. That is why none of these, and therefore no sense-data, could be held to exist outside the somato-centric *totum*. Yet when we look at a table from various sides, push our eye out of place, drug ourselves with santonin, and in other ways change our somatic sense-data, is there not something in the visual sense-data which remains the same? Clearly there is. It is what we may vaguely call 'the general look'. All the sensible qualities alter, yet somehow this remains. It is that in virtue of which we say that it is a *table* which we are seeing throughout the process—not an elephant, or a pot of geraniums. Yet this general look which all the data have in common is not a common *quality* present in them all. There is no one shape and no one colour which qualifies them all; and there is no one size either, nor intensity nor sensible position: quite the contrary. What is common to them all is a certain *relational* characteristic: there is some one solid figure which they all resemble in greater or less degree. No one of them perhaps is

exactly like any part of it : yet they all, as we say, remind us of it. This solid figure is as it were the *common theme* upon which they are diverse variations

It is therefore natural to suppose that in the Non-sensible there are two separate factors (or sets of factors), one of which is responsible for the Common Theme, the other for the variations upon it, and for the kinaesthetic data concomitant with these. The first we will call C, the other V. When I go out of the room, what really happens (it will be said) is that C and V cease to be connected with each other, and that is why the somato-centric sense-field comes to an end. But both of them continue to exist, and in particular C does. C in fact is what is left of the table when we go out of the room.

What can we say about the characteristics of C? We cannot say directly that the figure which is the common theme is *its* figure. For the common theme is not anything existing by itself. It is not anything actual, but something imaginary or supposed, as it were an abstraction from the diversely varying visual data, which alone are actually given. But we *can* say that C has at least as many parts as the common theme has ; that C's parts are arranged in an order of at least three dimensions ; and that the relations which its parts have in that order are similar to the spatial relations which the common theme's parts have to one another

This conclusion can be reached in another way. Instead of asking what on the non-somatic side remains the same in the presence of somatic variations, we can ask what differences remain in the presence of somatic sameness. Here too we are 'discounting' the somato-centric.

For instance, the size of our visual sense-data increases as we reduce the distance between them and the place where our kinaesthetic data are felt, and decreases as that distance grows larger. But if when two visual data A and B are at the *same* distance from our kinaesthetic ones there is still a difference of size between them, A being (say) twice as large as B : then *this* difference of size is not somato-centric, although differences between data at different distances are. Not that even this difference would itself subsist even if I shut my eyes or turned my back. For, after all, it is a difference between sense-data, and when the sense-data cease to exist (as they then would) it must cease too, since a relation cannot survive its terms. But it may be thought that it does directly *correspond* to some difference in the Non-sensible which would

persist even if I turned my back, and would have subsisted in it even if the sense-experience by means of which I discover it had never occurred at all. And since both shape and position may be treated as functions of size, the shapes and positions of the Non-sensible somethings can also be determined in this way.

The argument will apply to change also, for change is a kind of difference. Certain changes in our visual field, for instance, are concomitant with changes in our kinæsthetic experience; but certain others are not, for they still go on even when our kinaesthetic data are kept constant. Thus as I walk things appear to move past me in the opposite direction, and the faster I walk the faster they appear to move. But even if I stand still the train appears to remove in relation to the railway embankment, there is still a *difference* between its sensible place at one moment and its sensible place at a later moment. Again, when a balloon is being blown up, my visual sense-datum grows larger and larger, even though I do not walk towards the place where it is. Such changes then correspond to some sort of systematic differences (whether to be called change or not) which would still subsist in the Non-sensible even if my sense-experience had not occurred, and are unaffected by the cessation of it.

Or if we like we may regard this as the persistence of an identity rather than the persistence of a difference. The *same* process of change continues to be observed, even though there are variations in the somatic sense-data. Thus we can make the train appear to go backwards by moving past it very quickly: but the railway embankment appears to go backwards faster, and if there is a fence beside the line, the train still passes the same number of posts in the same time. Again, we can make the balloon appear to shrink by moving backwards away from it, but the men beside it appear to shrink more quickly than it does, in relation to them, it still grows steadily larger whatever our own motion may be.

The argument will obviously apply to other illusions as well as to these simple ones. Thus if we press our eyeball out of place, everything is doubled. But a whole mass of differences, differences of size, shape, colour, position survive the doubling, and are unaffected by it. And when we displace a part of the view by means of a prism, there is again a multitude of differences which survive the displacement.

It will not apply to hallucinations, nor to such entities

as *muscae volitantes*, after-images, or the spots seen in the field of view when we have a liver-attack. But that is just as it should be. What they correspond to is something in what I call my own body, or in myself, something which obviously does not form part of the object to which the data belong, and which though connected with the object while I am sensing ceases to be so connected when I am not.

THE METHOD OF SOURCES

Our aim as before is to discover what particular objects the Non-sensible ground of our sense-data 'consists of. Now what distinguishes one individual object from another? First its spatial and temporal characteristics. Secondly, its causal properties, what Locke called its *powers*. A particular object, it is suggested, is nothing else than a particular set of causal properties which, so to speak, inhabit a certain region of space during a certain period of time. We have therefore to notice just what non-sensible causal properties our sense-data give evidence of, and we must then try, as it were, to run these causal properties to earth, i.e. to discover in just what regions these properties are located.

The Method of Sources¹ purports to show that these causal properties are situated in the region where their effects (the sense-data) reach a maximum of intensity, and it regards that region as the *source* of these sense-data. This seems simple enough, but unfortunately we cannot reach this conclusion without raising and solving a number of difficulties in the way. That is why we have stated the conclusion at the beginning. otherwise the reader might lose the wood for the trees.

The first question is, why should these causal properties be anywhere at all? Not all causal properties have location in space: e.g. those which are characteristic of minds have none. Yes, but we are already supposed to know by the Method of Correspondence that the somethings upon which our sense-data depend are spatially ordered; therefore the causal properties which (on the view before us) constitute their being not only are, but are somewhere.

¹ So far as I know, this Method was first formulated (though not under that name) by Dr. C. D. Broad. Cf. *Scientific Thought*, Chapter IX. Dr. Broad's theory, however, is not by any means a purely causal theory, and accordingly does not fall under the criticisms which we shall make below, pp. 91-99.

Now obviously we cannot directly observe these causal properties. How then are we to locate them? Clearly we can only do so by examining the corresponding effects. A cause is where it acts, i.e. where its effects are produced: for *operari sequitur esse*. This leads to the rather surprising consequence that the cause of a somato-centric field or *totum datum* is present in every part of that field; thus if the *totum datum* includes visual sense-data, its cause will, as it were, be spread all over the field of view. We might indeed think that we were only concerned here with the cause of a *single* sense-datum, say the visual sense-datum 'belonging to' a certain tree, and that this is confined to the place where that particular sense-datum is, though the cause of the whole visual field is spread over a large region. But this would be a mistake. For that visual sense-datum is not, so to speak, autonomous, but somato-centric: it cannot be separated from the somatic data with whose variations it varies. Moreover, the cause of this twofold effect must be spread over the whole region intervening between the two. For changes in the intervening part, e.g. those which we describe by saying that a prism or a mist has entered it, are relevant to the effect. And if the cause is situated where the effect occurs, then the cause is spread all over this region.

It might indeed be suggested, as by Professor Whitehead, that every piece of matter is everywhere: so that every differential condition of sense-experience is extended without limits. With all respect to Dr. Whitehead, this would be a disappointment. For our aim was to distinguish the situation of one differential condition from the situation of another. And if they are all everywhere, this cannot be done.

But, fortunately, although the sphere of influence, and therefore the situation, of every differential condition is extended without limit, that sphere has a centre. And the centre of A's sphere may be a long way from the centre of B's, however much the spheres themselves overlap. Moreover, it is possible to find where these centres or rather central regions are situated.

For we observe that this whole region can be divided into two parts: a *central* one where the environmental sense-data are located, and an *outer* one lying between that and the place where our somatic sense-data are felt. And we notice that what occupies the central region and what occupies the outer region are to some extent independent of each other. A change in the one is not invariably accompanied by a change

in the other. Thus if a prism is introduced 'between me and the thing I am looking at', i.e. into a place intermediate between my somatic sense-datum and the central region, my visual sense-datum is altered—bent perhaps or displaced, and its edges made iridescent. Or again the sound of the thing can be altered by the introduction of a screen between myself and the thing. But if I move my point of view towards the central region, as soon as I pass the prism or the screen the alteration is undone, and I sense exactly the same sort of sense-data as I sensed from that place before. Thus it appears that the prism or the screen affects that part of the differential condition which lies on its outer side, but not the part which lies on its inner side.

On the other hand, changes sometimes occur in the central region with no corresponding change in the outer region. Thus if we come very close we can see the movement of a blade of grass in the wind, but if we stand farther off, the movement ceases to be visible: that is, the one sense-datum changes, the other does not change. It is true that we cannot observe both at once, for we cannot be in two places at once. But we notice that as soon as we come close we get a changing sense-datum, and as soon as we retire we get an unchanging one: also we can see many similar blades of grass at the same time, and while those very close to us are visibly moving, those at a distance are not. Evidently then the presence or absence of the change depends upon the centrality or non-centrality of the region.

Further, there is *never* an exact concomitance of central and non-central changes. As we move away from the centre something is always lost. There is a blurring of detail, an increasingly gross and, as it were, 'impressionistic' character about what we see. As we saw before, the differences between one sense-datum and another always grow less as we move away and increase as we approach; and this applies to difference between things successive, i.e. to change, as much as to the difference between things simultaneous.

Thus as between the central region and the outer region there is a certain 'looseness'. And this seems to show that the differential condition is not all homogeneous, but consists of two parts, a central part and an outer part, which are to some extent independent of each other. (Or perhaps there is one part in the central region and an indefinitely large number of others surrounding it at different distances.) Thus

if we are still to say that the object is spread all over its sphere of influence, at least it is not homogeneously spread. Its *distinctive* nature is fully present only in the central region, and fades gradually away as we move outwards.

But we can go further. The 'influential' character of the outer part of the sphere of influence, the power to produce in it sense-data belonging to this particular set, is *dependent* upon that which occupies the central part. If the central condition is removed or abolished, so that no sense-data of the old kind can be had in the central region, then the external condition is removed or abolished too. If the thing cannot be seen from one pace off, because some one has burnt it, it certainly cannot be seen from 50 paces off, or 500. Of course this by itself is consistent with the view that the two conditions are interdependent and stand or fall together (like the inside and outside of a door), or even that the central one depends on the outer one. But had this been so, the abolition of the outer condition would have entailed the abolition of the central condition also. And this is just what we do not find. In the dusk or on a misty day I cannot see a rock from 50 paces off, but it by no means follows that I cannot see it from one pace off. If a large obstacle is introduced between me and the central region,¹ I no longer get my visual sense-datum at all, even in broad daylight and sounds, smells and thermal sense-data can be cut off in the same way.² Yet as soon as I pass the obstacle, I get my visual or other datum again, exactly as before. In all these cases the outer part of the differential condition is abolished, permanently or temporarily. But the central part is not affected in the least. It is the central condition, then, which is essential to the existence of the sense-data: without it there are no sense-data of the relevant kind at all. The outer condition is something which may or may not be added, according to circumstances; and it cannot be added at all, unless the central condition exists first. The central condition may therefore be called *the source* of all these sense-data. The central region is *the place where the material object is*: and the shape of it is the *shape of the object*.

In the same way the differential condition, for instance the differential condition A, has an auditory, an olfactory, and a

¹ It is strange that philosophers have not paid more attention to screens, and generally to the 'hiding' of one object by another

² Why do we attribute all these differing effects to the same condition A? Presumably because they vary together

thermal sphere of influence. With them, too, we can perform the same operation : in each case we reach a region of maximum intensity. In the case of smell, for instance, we reach a place where that particular smell is most intense and striking, where it most nearly monopolizes the ' field of smell ' by excluding other competing smells from consciousness, and when it is most differentiated from other smells.

Now it turns out that the *same* region R is the centre of all four spheres of influence, visual, auditory, olfactory and thermal. Moreover, it is only in this region that the thing can be ' touched ' That is, tactual data coincident with the visual ones occur only when my somatic sense-data are spatially continuous with some part of this region. In particular what we may call the *obstacular* character of the thing is seated in this region. This character has two elements, corresponding to the two elements in our experience of our own movement, the visual and the kinaesthetic. My point of view can be moved up to the boundaries of the region, but not through it. And the region is also what Dr. Broad calls a ' region of discontinuity ' in my kinaesthetic experience.¹ If that experience is to go on, it must undergo a more or less abrupt change at that place.

Thus even if we are obliged to say that the differential condition A is in a way everywhere, we can still maintain that it has a peculiarly intimate relation with the region R. Even if it is everywhere, it is, so to speak, more at R than anywhere else. And if ' the place where A is ' be taken to mean ' the place that belongs to A *as opposed to other things* ', which is certainly a convenient usage, we might even say that R is *the* place of it : for the rest of its sphere of influence is shared with other things

Further, whenever I am sensing at all, various differential conditions (usually a considerable number) are, as it were, contributing something to my *totum datum* at that moment. But the amount which any one of them contributes varies very greatly with my position. Suppose there is a field of view containing three sense-data, *a*, *b*, *c*. Let A be the differential condition of *a*. We then find that as we move our point of view towards the place where *a* is located, A's contribution steadily increases.

This increase is of three kinds: First, A contributes a larger and larger *proportion* of the total field of view and of any other concomitant sense-field that there may be : eventually

¹ *Scientific Thought*, p 342.

perhaps the whole. Secondly, the *intensity* of its effect increases steadily; the colour grows more and more bright, and its strikingness (what Hume called its 'force and liveliness') grows greater. Thirdly, the amount of *characteristic or individuating detail*¹ in the effect increases. Perhaps this last point needs some elucidation. Let us take the case of sight. Seen from a great distance, anything has much the same colour as anything else, a bluish purple; and within each thing the colour is pretty uniform: tree, field, or wood is just a homogeneous purplish patch. But as one comes nearer, colour differences 'come out', differences between thing and thing, and internal differences within each thing. Correspondingly differences of shape come out too, for visible shape is nothing but the boundary between two differently coloured expanses.

At last I come to a place where A's contribution reaches its maximum in these three respects. Let us call this place p_1 .

I then repeat the process from another direction. Again I can find a place where the contribution reaches a maximum: let us call it p_2 . I then do the same thing from as many other directions as possible, always operating with sense-data 'of' this object. In this way we can fix a set of places, $p_1, p_2, p_3 \dots$ each of them being a place of maximum contribution; joining these together, I find they outline a certain solid region R. This region is the *central region* of A's sphere of influence, so far as its visual effects are concerned.

Nor is it only visual experience which would lead us to that conclusion. It is true that the qualities which characterize smells and sounds are not located on surfaces, as colour is. They seem rather to permeate a volume, in the way that heat and cold do. But even if they are entirely non-spatial (as some authorities hold), this will make no difference. For sight shows us that events in non-somatic regions, e.g. the interposition of a door or other obstacle, make a difference to sounds and smells just as they do to visual data.² (The same applies to thermal data. but they are in any case extended in their own right.)

¹ Cf Chapter VIII, below, p 225

² It must also be remembered that a sound or smell is in itself incomplete, and must be taken along with the somatic sense-data with which variation it varies, and these are always extended. On the other hand, these extended elements in the total effect will be assigned to the Standing Condition. Thus so far there would be no means of localizing the Differential Condition

Clearly the method will also apply to what we may call 'horizontal' causality as well as to the 'vertical' sort which we have been considering: i.e. to the effect of Non-sensible things on each other as well as to their production of sense-data for us to sense. For instance, there are regions occupied by gravitational and magnetic 'fields' resembling the sensational 'spheres of influence' which we have discovered.¹ We observe that any object introduced into such a region suffers a certain kind of change, say is deflected from its path; and this deflective effect is greater the nearer the object is to a certain central region, and there it reaches its maximum. There are also fields in regard to physical temperature,² and these, too, are spread out round a central region of maximum intensity. The wax, for instance, is observed to melt more and more quickly as it is moved towards this central region; and the nearer our piece of bread is to this region, the sooner it is toasted.

Moreover, we find that fields of several kinds have the *same* central region. And most important of all, the region which is central for horizontal causality is also central for vertical causality. Thus the source of the physical effects is the same as the source of the sense-data.

We must, however, remember that this application to horizontal causality is secondary and derivative. For before we can talk about physical fields at all, we must first have established the existence and situation of certain material things: not indeed of the things which are the centres of these fields, but of those which are affected by them, e.g. planets or pieces of wax, for fields are definable only in terms of the behaviour of the affected objects.

THE METHOD OF INDISPENSABLES

We need not say much about this. In several ways it resembles the Method of Sources. It, too, assumes that a particular thing consists of a particular set of causal properties located in a certain place. But its primary concern is with horizontal causality, not with vertical

We get our knowledge of horizontal causality by observing

¹ Cf Mr Russell's account of 'non-psychical analogues of perception' in his *Outline of Philosophy*. " "

² We may define this for our purposes as the power of causing mercury to rise in a thermometer.

that there are certain non-somato-centric ¹ correlations between one sense-given change and another, e.g. between a change in one part of the visual field and a change in another part. Now if we could discover what is indispensable to the occurrence of such a sense-given change, we should have discovered at least a part of its cause. Further, if we could locate this indispensable, we should have discovered the shape and the position of something which is unaffected by our presence or absence, something which is neither *altered* by the Standing Condition of our sense-experience, nor *contains* it as a part : for since the correlation is non-somato-centric, what was indispensable when we were looking will remain indispensable when we are not.

Now it is quite easy to see that certain sense-given changes are *not* indispensable to the occurrence of a certain observed effect. In the case of the melting wax we can eliminate everything except (say) the stove. Moreover, most of the sense-data belonging to the stove itself can be eliminated. For instance, we see a mirror image ' of ' the stove in a looking-glass, or in the polished surface of our shoe. These are not indispensable. For if the mirror is broken, and the shoe taken off, the effect still occurs exactly as before. A mirror image never *does* anything. And the distant views of the fire can also be eliminated. For if we cut them off by means of a screen put in front, we still find the effect going on when we look round the screen. Nor does the magnification of the sense-datum by means of an intervening lens increase the effect ; displacement by means of an intervening prism does not reduce it. Further, certain changes in the near views, which *do* alter the effect (e.g. a slight movement of the damper),* ' are not visible from a distance at all ', i.e. there is no corresponding change in the distant views.

Such arguments show clearly that if any visual sense-data are indispensable it can only be those which are sensed from a minimum distance, i.e. those situated on the surface of the ' central ' region, as the Method of Sources called it. And factual sense-data also, which occur only on this surface, have the same claim to be indispensable.

But the truth is that none of our sense-data are really indispensable at all to the occurrence of the effect, not even these. For as we showed earlier in this chapter, we constantly observe effects without observing any cause for them at all : indeed, this

¹ Likewise non-psycho-centric. But we may leave out this complication.

argument from sensed effects to unsensed causes was our main ground for believing in the existence of things other than minds and sense-data. The most we can say is that there are certain privileged sense-data which come nearer to being indispensable than any others. If the material world is composed of sense-data existing in the mind of God, as some philosophers think, then it is these privileged sense-data that it must be composed of,—but they will then be not merely ours, but God's as well, and it will only be their relation to Him that will make them indispensable. Again, if we are Phenomenalists and wish to state all the laws of Nature in terms of actual and possible sense-data, then it is in terms of *these* sense-data that we must state them.

But though not even these privileged ones among our sense-data are indispensable for the occurrence of the effect, they are indispensable for something else, namely, for the prediction of it. If we wish to predict the effect, it is to tactual sense-data and to the visual sense-data of the central region, i.e. to those which are largest, most intense and display the maximum of individual detail, that we must turn. If we rely on distant or dim views, still more if we rely on sounds and smells, we shall go wrong.

Now there seems to be only one way of explaining this fact. It is true of course that we are acquainted only with the sense-data, and that these are always *inefficacious*: they are but collateral effects and all causes, vertical and horizontal, are non-sensible.¹ But it is at any rate clear that in the observation of these (in this sense) 'indispensable' sense-data, we come as near to the observation of 'horizontal' causal properties as it is possible for us to come. Otherwise, why should they be indispensable for prediction? But we already know by the Method of Correspondence that there is some sort of detailed correlation between the characteristics of sense-data and the characteristics of the Non-sensible. It is therefore reasonable to conclude that these indispensable sense-data are correlated with horizontal causal properties in a more simple and direct way than other sense-data, or if we may say so, are a more direct 'expression of' their nature. (Of course all sense-data,

¹ Cannot a sound, i.e. an auditory sense-datum, cause me to jump out of the way? But really it is the sensing which *causes* the jump. The sensing, it is true, would not have existed unless there had been a sense-datum for it to be 'directed upon'—but this relation again is not a causal one.

however odd and however far from being 'indispensable' in our sense, are directly correlated with vertical causal properties, except in total hallucination. Indeed, this is an analytic proposition.)

This enables us to localize the horizontal causal properties at least approximately. We know already that the Non-sensible is spatially ordered. Therefore the causal properties which distinguish one portion of the Non-sensible from another, and so make its spatial order possible by individuating its parts, must pervade regions of space. But if so, the regions they pervade will be at least very similar to the regions occupied by the sets of indispensable sense-data, and will be related in very much the same way as these sets are related to one another.

THE METHOD OF HYPOTHESIS

This is more modest than the others. It does not profess to argue directly from the characteristics and correlations of sense-data to the existence of a physical world having such and such particular constituents. It merely asks us to *assume* the existence of this world. And it claims that if we do, we can give a detailed explanation of our sense-data, of their existence and of the particular natures which they are observed to have : and that no other assumption that we can think of will enable us to do so.

This Method is open to serious objections. In the first place how do we come to think of this hypothesis ? Do we just invent it out of the blue ? And if we do, how have we been clever enough to think of just this hypothesis, with just these particular details (such complex detail too), instead of the thousand and one others which we might have thought of, most of them so much simpler ? Of course we do not invent it. We have already on other grounds formed a conception of the physical world, and moreover of this particular physical world containing just this square table in front of me. And we must note that the difficulty arises not once only but many times over. We must modify our assumption to keep pace with what we call scientific discovery, or indeed with the continual growth of our own experience. Something new is always happening, and whether we like it or not we are always coming across fresh sense-data whose determinate characteristics and relations are new to us, though their generic characteristics are not.

How then do we form this conception (or assumption)—just this determinate conception, e.g. of the existence of a square table in this room (not an elephant or a round table)? The answer is clear: Either by processes described in the other Methods, or by some process which falls outside the Causal Theory altogether.

'It does not matter how we form it—instinctively if you like. That is a matter for Psychology. The point is, we have now to justify it: and this we do by finding that it alone enables us to explain our sense-data.'

But this relegation of the process to Psychology seems a little dangerous. How can we tell, until we have investigated the matter, that the process by which the conception is formed is, taken by itself, a completely non-rational one (for that is what is meant by saying 'it does not matter how it originates')? Perhaps the process is one which results not merely in the conceiving of the existence of a square table, but in the knowledge or the rational conviction of its existence. But let us leave this point for the moment, and ask how is the justification supposed to be done? Why, for instance, is this hypothesis better than Berkeley's?

The answer must of course consist in expounding just those detailed characteristics of the *explicandum* which can be accounted for on this hypothesis but not on the other. For instance, we see a certain set of coloured surfaces having various sizes and various shapes, some trapeziform, some lozenge-shaped, some square. We are told that their existence is explained by the hypothesis that there is a square-topped table which influences our sense-organs by means of rays emanating from it in all directions. But why is this a better explanation than Berkeley's? Why should the cause of the sense-data be in space at all? We can only answer by appealing to the Method of Correspondence. And granting that it is in space, why have we to assume that the most important part of it (the differential condition) is a *square* object? Why just this shape in particular out of all the shapes it might have: what in detail are the facts which can be explained by the assumption of a square object, but cannot be explained by the assumption of a round or triangular one? Just the ones on which the Method of Discounting insists: if we consider the set of sense-data, we find that a square is the common theme upon which the rest of the sensed shapes are variations. And again, they are the ones on which the Method of Sources and the Method of Indispens-

ables insist : that these sense-data have a region of maximum intensity which is their source, which region has a square surface, and that it is the square shape and no other which we must take account of if we are predicting future sense-data in this neighbourhood, e g. those which would occur if we took a photograph and looked at the resulting negative, or if we moved the teapot so many inches in a certain direction.

Thus as soon as we press for details it becomes obvious that the Method of Hypothesis merely repeats the other four. And the truth is, it is *not* really a hypothetical method : its so-called hypothesis is not really an assumption about whose truth we are initially open-minded, and which we invent simply with a view to explain certain puzzling facts. And the so-called justification of the hypothesis does not consist (as it should) in showing that from the assumption certain conclusions follow which are identical with the observed facts /what we really do is to argue the other way about—from the observed facts, the characteristics and correlations of our sense-data, and the so-called assumption is our conclusion, not our premise. Thus the attractive modesty of the Method of Hypothesis is a false modesty, a fallacious cloak for mere plagiarism, and plagiarism at the expense of arguments which are not hypothetical at all ; the whole method is nothing but a mystification, which reverses the real order of our thought.

This concludes our exposition of the Causal Theory Its basis is clearly the fragmentariness and disconnectedness of sense-experience ; which gives occasion to the argument from sensed effects to non-sensible causes. The Method of Correspondence is the next step, and the other three methods are only ways of making determinate the conclusions of this first one. We must now turn to criticism. Has the theory succeeded in establishing its main contention that our consciousness of material objects is inferential, and consists in arguing from sense-data to their causes ?

Obviously it cannot have proved that this is our *only* way of being conscious of material objects. The most it can show is that it is *a* way. But we shall find that the theory has not really established even this conclusion, that its arguments are fallacious, and that the conclusion itself is false.

Let us begin with the Method of Correspondence, since this is the foundation of the others. Let us grant that every sense-datum has a cause, and that for every difference in sense-data

there must be some corresponding difference in the Non-sensible upon which they depend. Granting this, how much does the Method really establish?

It proves that in the Non-sensible there must be an ordered plurality of some sort: and the fact that some sense-data are independent of others in their changes proves that there must be some sort of independence as between the items of this plurality. But what sort of plurality? Not necessarily, for all this Method can tell us, a plurality of mutually independent *individuals* or *things*. They might be a number of *characteristics* of the same thing, and yet display sufficient independence to account for the observed facts—as a man's taste in music may change without any change in his Liberalism or his liking for pork. And after all, there is no reason to think that sense-data reveal the *whole* nature of the Non-sensible. Perhaps they are correlated with only a tiny part of its total being. And if we knew more, the unity of it might seem much more striking than its diversity.

Nor does the appeal to the *spatial* characteristics of visual, tactual, and kinaesthetic data really prove that the plurality in the Non-sensible is likewise of a spatial sort. Let us take, for instance, the fact stressed in the Method of Discounting that our visual sense-data go together in sets, such that within each set there is a common theme which is variously distorted in the shapes of the several members. We can easily imagine how this could come about even if the cause or causes of these sense-data were not in space at all. Thus if I am not good at drawing and I make a number of attempts to draw a circle free-hand on the blackboard, we find that none of the shapes produced is actually a circle: yet a circle may be called the common theme on which they are variations. But it does not follow that my will, which caused my hand to trace out these shapes, was circular; or that it was divided into two parts, a circular one and another which causes the distortions. What is responsible for the common theme is the *thought* of a circle, and this is not itself circular, or spatial at all. 'But is there not a visual image which is circular?' The answer is, that if I am a bad visualizer this image is every bit as inadequate as any of the shapes which I draw on the board. It is not the common theme, but one of the variations: indeed it is a whole host of them in itself, for it 'flickers' from moment to moment, changing its shape and size. Moreover, be the image as good [as it will, not it but the imaging of it, the forming it and holding

it before the mind, is what matters, if images come into the question at all : and the imaging is a mental act, and has no shape.

Such considerations suggest that the Causal Theory cannot even refute Berkeley. Our sense-data, including the extended ones, might all be directly produced by a spirit, provided that spirit *conceives* of a system of spatially ordered three-dimensional figures.¹ It is not necessary that the system of three-dimensional figures should actually exist : that there should *be* a world of spatially ordered solid entities. The Method of Discounting will only tell us the detail of what God thinks, and will not prove the reality of anything besides the propositions or conceptions which are before his mind.

The requirement of the *Method of Sources* can also be met by Berkeley's theory. According to Berkeley, the Method only reveals the *plan of action* which God ordinarily ² adopts in producing our sense-data. The thought of the 'central region' is what guides God in producing sense-data. His plan is, that when He thinks of my point of view as gradually approaching nearer to a certain region R, He provides me with sense-data of gradually increasing intensity, reaching a maximum when He thinks of me as right up against it. And when He thinks of the interposition of screens or prisms between it and my point of view, He alters my sense-data, or cuts them off altogether, as the case may be. But when I by an act of will cause Him to change His thought, so that He now thinks of my point of view as situated between the screen and R, He restores the sense-data again.

Lastly, Berkeley would say that the *Method of Indispensables* only shows what thoughts God is thinking 'when there's no one about in the Quad'. The argument from the fragmentariness of sense-data to the existence of unsensed causes ³ would show that He *is* then thinking, and thinking of changes (though not changing Himself). The Method of Indispensables would tell us *what* changes (approximately) He is thinking of, and in connexion with what regions of Space He thinks of them. The changes, I suppose, are changes in the detail of His plan of

¹ Cf. Mr. H. W. B. Joseph's *A Comparison of Kant's Idealism with that of Berkeley*.

² Not always. For God might work a miracle. And obviously the Method of Sources cannot disprove this possibility.

³ Causes : but despite their plurality we have seen that they might be united in a single subject.

action, changes in the sense-data which He *would* produce, if He had occasion to think of any one as being in the Quad.

If all this be so, the Non-sensible need be no more spatial and no more divided into a number of distinct individuals than the plot of a cinematograph play. The pictures we see on the screen are extended; but their ultimate or original cause is an act of imagination, which is not. Again the characters which we see during any one part of the performance seem to change independently of one another: the hero, the villain, the sheriff go their several ways, and each has his own history. But for all that, the act of imagination which produced the plot with all that is in it, is single.¹

Nor is Berkeley's the only alternative which is consistent with the facts. A monadistic theory would also fit them. The monads would be ordered in an 'intelligible' non-spatial order. What sort of order? They might be ordered by means of the resemblances and differences between the sense-fields sensed by one monad and the sense-fields sensed by another. If we compared the sense-experiences of a number of different monads, and considered together all the sense-data contained in all of them, we should find that this whole aggregate of sense-data could be sorted out again into sets. Each set will be what we commonly call a set of views of the same physical object; only there will really be no object—there will be nothing but the set of views. And these sets will be just like the ones to which we apply the three Methods of Discounting, of Sources, and of Indispensables. Those monads, then, whose data belong to the same set, will be *more directly* related than those whose data belong to different ones. But these latter monads may be *indirectly* related. For instance, M₂ may own sense-data which fall into the same set as M₁'s, and others which fall into the same set as M₃'s. Thus M₂ and M₃ will be indirectly related, and M₂ being directly related to both may be said to be (in a non-spatial sense) 'between' them.

This really means that although (according to the theory) there really is no world of material objects—though there is not even a single space, but a plurality of spatial sense-fields, standing in no spatial relations to each other²—yet sense-data

¹ We may add that even the detail of the three methods can all be copied on the screen. The sense-data can grow larger and more intense: the other side of the object can be displayed: perspectival and other distortions can occur, and so on.

² Just as a scene in one of my dreams stands in no spatial relation to a scene in one of yours, though both scenes are extended.

are ordered exactly as if there were : and by this means the several spirits which sense them are ordered too. It is true that to *discover* the order, it is necessary to *conceive* of this world of material objects, and of a single space ; or at least of a unitary system of spatially related solid entities, changing in various correlated ways. The Methods still apply : and the single theme of the Method of Discounting, the central region of the Method of Sources, and the region picked out by the indispensable sense-data, are all solids of this kind. It is true also that if there is a *Monas Monadum* who creates this system of monads and by an act of harmonizing arranges the incredibly complicated correlations between the sense-data of each and the sense-data of all the rest, it too, like Berkeley's God, will have to conceive of this system of solids. But it does not follow, any more than it does on Berkeley's theory, that the system of solids *exists*. It is enough if they are conceived of.

The Causal Theory, then, will not really prove the existence of a material world, but at most, only the existence of a Non-sensible something having within it a plurality of factors.¹ For all that it can show this something may be spiritual, and it need not even possess parts. The many 'factors' might simply be many characteristics of one subject.

But will it really prove even as much as this ? We shall now try to suggest that it cannot, and in doing so we shall also suggest that we have a consciousness of the material world, but that it is not an *inferential* consciousness—neither a causal inference nor any other sort of inference.

In the first place it is obvious that none of the Methods is applicable to a single sense-datum taken by itself, but only to a *set* of sense-data. What sort of set ? Not the sort of set which is *given* when a number of sense-data are presented to the mind at once, e g. not the sort which constitutes a single field of view. A single sense-field is of no more use than a single sense-datum. How then do we come to consciousness of the required sort of set, if it is never given in sense ? How, for instance, do we come to be aware of that set from which, in the Method of Discounting, the common theme is extracted ? Obviously the members of it have to be picked out from a number of different sense-fields and then compared together, by what Kant calls an act of synthesis. But what kind of relation unites the set into onewhole ? Upon what principle, or with what question in mind,

¹ It is necessary, as we have seen, to use a neutral and non-committal term.

does the synthesis proceed? As we shall see later, in Chapter VIII, the guiding principle is just the thought that there is *some one solid* to which all the members of the set are related, some as constituents of it and some as distortions: the question in our mind is, what particular kind of solid is it in this particular case? Indeed, without this guiding principle not only the synthesis but the preceding picking-out of the *syntheta* from the irrelevant contexts in which they were presented would never have occurred. From the first, we are on the look out for sets of this sort: we expect to find that our sense-data 'adumbrate' solids in this way.

It follows that the Common Theme (and equally the Central Region for which the Method of Sources seeks) is not discovered by reflection on the completed set. At the beginning of the synthesis, it is already present to the mind, though in a very indeterminate form: in the process of synthesizing we determine it more and more closely; and the completion of the synthesis, whereby the whole set of data stands before the mind at once, necessarily includes the complete determination of the common theme, by their relation to which alone (in the way of being distortions or portions of it) the members are held together. Thus the Method of Discounting is simply discovering what we know already, and what we *must* know, if the set of data without which the Method cannot begin is to be present to our consciousness. either that, or it is simply another name for the process of synthesis itself—but a very perverse and misleading name.

But this is not all that we need, if we are to be conscious of those sets of sense-data upon which the Methods operate. We need the idea not merely of a solid entity, but of *Space*: the thought that every solid entity is enclosed within a wider region or 'field', in which a number of solid entities can stand related by the same sort of relations as subsist between the parts of any one of them: and that given any two solid entities, there is always a region enclosing both. If we were without this thought, how should we avoid collecting into the same set sense-data which belong to one solid and sense-data which belong to another, in cases where these solids were exactly alike in shape and size? How, for instance, can we distinguish the sense-data belonging to a lump of sugar in this room, from those belonging to a lump of sugar in that one? We can do it only because the idea of Space enables us to synthesize not merely sense-data but their contexts, and so to apprehend a set

whose members are whole sense-fields. Thus here are two white sense-data which in themselves are so shaped that they could both be distortions of the same solid. But their contexts will not fit together as distortions of one single *set* of solids. The context of A is a distortion of one set of solids; the context of B of a different set. A then belongs to one thing, and B to another. And although these two solids with their solid neighbours turn out eventually to be united in a wider system of solids embracing both, the twoness remains.

In the Method of Sources this need for a previous *spatial synthesis* is particularly obvious. The Method requires that the observer be conscious of *moving* in a certain direction, or indeed of moving successively in a number of directions all converging on the same place. But how is he to be aware that he is moving, or if you will, that his point of view is moving?

The subject's consciousness of his own identity will not tell him this. An identical ego might conceivably sense a series of extended sense-fields standing in no spatial relation to one another—presumably this does happen in dreams and visions—and, if so, there would be no motion of himself to be aware of. (There would indeed be a point of view within or attached to each sense-field¹ and it would be spatially related to data in its own field. But *between* these points of view there would be no spatial relations. They would just be different. We could not then speak of the *movement* of the subject's point of view, or of his movement from one point of view to another.)

Obviously the synthesis or synthetic comparison of sense-fields is the only thing that will meet the case. To be aware of my own movement, I must refer my different and successive visual data to the *same* set of spatially related solid entities. It is by reference to these solids, and to the varying distance between their surfaces and my point of view, that I fix my position at successive instants, and so know that I am moving, and in what direction. This act of *identification*, then, which is nothing but the spatial synthesis described above, is absolutely essential to the application of the Method of Sources: without this act I could never know towards what region I was moving, and even that I was moving at all. Thus in order to discover by that Method where the object A is, we must already know where objects B, C and D are, which constitute our constant 'frame of reference' for determining our own motion. This

¹ On the point of view of the observer, see Chapter VIII below, pp 252-260.

does not mean that the Method is useless, but it does mean that it is secondary: it is not our means of discovering the position and shape of *every* material object (as it professes) but only of an odd one here and there. Thus, for instance, we use it to fix the position of an invisible object by means of sound, smell, or heat: we sometimes use it to unmask a mirage: and in that modification of it which applies to horizontal causality, we use it (eked out with much 'interpolation' and analogical argument) to fix the position of a heavenly body by means of the changes which it causes in a photographic plate. Conceivably the Method of Discounting may also have this secondary and occasional use, though I have not been able to think of any instances.¹

However this may be, so far as these two Methods profess to be *the* source of our consciousness of a determinately shaped and situated system of spatially related solid objects, they are obviously guilty of a vicious circle, and must be abandoned.

We must say the same of that consciousness of correlated sense-given changes by which causal properties are detected, and which specially concerns the Method of Indispensables. Obviously a sense-given change is some sort of *series* of sense-data. What sort of series is it, and how do we come to consciousness of it? It is not any series we please, even though temporally continuous, which will give us consciousness of causal properties in the physical world. For instance, I see a waving flag, then a tree, then a thrush in flight. Here is a series of sense-data, and there may be no temporal interval between them: but nobody would call the series a *change*. Clearly if the series is to be of the right kind, it must have some sort of *spatial* unity. Its members must all be referable as distortions or portions to some single solid entity, which retains its identity, while altering its shape or position (or qualities).² So much for the one sense-given change. And the same account

¹ Presumably because it adds so little to the results of the Spatial Synthesis, merely doing over again backwards what it has done already. And the same applies to the Method of Indispensables. But the Method of Sources, though it presupposes Spatial Synthesis, does add something. It informs us that the solid entity is a region of *maximum intensity*, and of this Spatial Synthesis, as such, says nothing.

² On 'standard' qualities, e.g. standard colours and scents, see below, Chapter VIII, pp. 209-215. To these the qualities of sense-data are referred, as deviations from them, just as the various shapes are referred to the single solid. But we need not introduce this complication here. Obviously it does not help the three Methods.

must be given of the other, which is observed to be correlated with it. Now are not these two correlatedly-changing solid entities very much like material objects? Are they not the very objects, the position and shape of which the Method of Indispensables professes to discover? Before we can begin applying it, we must already possess the knowledge which it professes to give us.

No one who studies the Causal Theory, certainly no plain man who studies it, can fail to feel that there is a certain fundamental artificiality and, as it were, incredibility about its whole procedure—and not merely about the details but about the very idea of such a theory. Why, we ask, does it invent cumbersome Methods (whether these or others) to prove something that every one has always been convinced of? For surely every one is convinced not only that there are material objects, but what shapes, sizes and positions they have. We feel, in fact, that there is no *need* for a Causal Theory: that it is all the time preaching to the converted—and as it turns out, preaching in no very convincing way. Is there anything to be said for this instinctive dissatisfaction?

/ I think we must admit that, historically speaking, none of us reaches the belief¹ in matter by inference, but that we all had it from the beginning. Historically we all begin by *taking for granted* that visual and tactual sense-data are somehow constituents of the surfaces of material things. The Causal Theory cannot really sustain the contention that we start in infancy with a causal argument in accordance with the Four Methods; and that the argument becomes, as it were, telescoped through habit, until by the time we reach years of discretion we jump straight from the premise (the existence of such and such sense-data) to the conclusion (the existence of such and such an object). Surely as a matter of fact it is just the other way about. The jump comes first—imagine infants or cats solemnly applying the Four Methods!—and it is the causal arguments which are the product of reflection, sophistication, and sceptical disillusionment. Indeed, it *must* be the other way about. For the arguments will only prove at most the existence of *some* Non-sensible something having an ordered plurality of factors: they will not prove the existence of a material world. But that we at least believe in (or rather perhaps undoubtingly accept) the existence of a material

¹ Perhaps we should say *not doubting* rather than *believing*.

world is perfectly certain. And if we cannot reach that state of mind by inference from sense-data, and yet our sensings of sense-data occasion it (as they obviously do), we must have reached it by a jump. The state of mind may be rational or irrational: that is a point to be discussed later. But at any rate we are in it.

The Causal Theory holds that we are not entitled to consider that visual and tactual sense-data are constituents of the surfaces of material objects until we have proved that they are. But, whether we are entitled to or not, what we actually do is just the opposite: we consider them to be so until it is proved that they are not. And indeed certain privileged sense-data, as was incidentally brought out in our exposition of the three last Methods, do have a considerable claim if not to *be* constituents of the surfaces of objects, at least to be approximately coincident with them. Further, there are many others which differ so little from these privileged ones that in our ordinary practical frame of mind we easily fail to notice the difference. True, certain glaring exceptions obtrude themselves, mirror-images for instance. All men, and probably many animals, are satisfied that these are *not* constituents of the surfaces of objects. But how do they arrive at this opinion? Clearly by an argument: a material object cannot be in two places at once, but it would have to be if this were part of its surface. Thus, historically speaking, the Causal Theory has got things just the wrong way round. Historically, it is not the existence of material objects, but the existence of illusions, that we first demand proof of. (Perhaps the belief in matter could only be justified by inference: if so, it looks as if it could not be justified at all. But we are not at present discussing its justification.) Further, even when we have thus inferred that some sense-data cannot be parts of the surfaces of objects, it is a long time before we inquire into their causes. Certainly before we do we have long been familiar with all sorts of 'horizontal' causation whereas in the Causal Theory we begin with the discovery of 'vertical' causation, and horizontal causation is only revealed later, by the application of the Methods.

Again, historically speaking, the argument from the fragmentariness of sense-data to the existence of unsensed causes is not one that any one actually starts with. In our ordinary everyday consciousness we never doubt for a moment that the table is there when we are not looking at it, and we should never

think of asking for an argument to prove this. It is the other way about. Argument is required to convince us that sense-data do *not* exist in the absence of sentient: we require none to convince us that material objects do. The fragmentary and interrupted existence of sense-data is, historically speaking, no original premise, but the conclusion of a long and elaborate argument.¹ And it is a conclusion one of whose premises, namely, that certain sense-data are *not* parts of the surfaces of the material things which they belong to, is only reached as a sort of by-product of the synthetic process whereby we assure ourselves that there *are* certain material things which *do* have surfaces of such and such sorts. These sense-data then, not being constituents of material things, need not share in that persistence and independence of sentience which are characteristic of matter. Next, considerations of continuity lead us to extend this conclusion to *all* sense-data, so-called normal ones. But even then, though non-material, they might still persist 'on their own'. What eventually convinces us that they do not is, I suppose, their somato-centricity. But this we notice last of all, long after we have assured ourselves of the existence of all sorts of material objects, including our own body.

Thus one of the starting-points of the Causal Theory, namely, the fragmentary and interrupted existence of sense-data, is *not historically* original at all. What of the others, that every event has a cause, and that every sense-datum is an event?

Let us first consider the conception of cause. It is surely obvious that, historically speaking, we only reach this conception by reflecting upon the nature of certain causative substances or *things*, of whose existence, moreover, we are *already* convinced before the reflection begins. And those things are material things, including our own animate organism. We do not first have the conception of cause, and then reach the conception of matter later. On the contrary, we begin with the conception of matter, and reach the conception of cause (not without difficulty) by analysing this.

I do not indeed wish to deny that there are in some good sense 'innate ideas', that is, a power to conceive certain concepts which is not dependent upon acquaintance with instances of them, as the power to conceive redness is dependent

¹ That our *sensings* are fragmentary and intermittent is of course obvious from the first.

upon acquaintance with red sense-data. On the contrary, I wish to assert that there are some innate ideas. Nor do I wish to deny, on the contrary I wish to assert, that these 'ideas' are *a priori* as well as innate, i.e. that the power to conceive these concepts is a necessary condition of the possibility of certain kinds of experience (say for making perceptual consciousness possible as distinct from mere acquaintance with sense-data). I only wish to maintain (1) that what is innate and what is *a priori* must be the whole complex notion of material thinghood, in which causality is a factor, not just the notion of cause alone; (2) that we only come to clear consciousness of such concepts as these when we have already applied them many times to acquire consciousness of entities exemplifying them: in this case, to acquire consciousness of material things.

So much for the conception of cause. But what of the proposition that every event has a cause? Is this proposition, we may ask, even true? Many people have held that some events have no causes, namely, human volitions. The most that could be maintained is that every event *in the material world* has a cause: and even this is only true of 'macroscopic' events, if the Principle of Indeterminacy be correct, not of 'microscopic' ones.

Let us now consider the application of the proposition to sense-data. Obviously if it is not applicable to them the whole Causal Theory collapses. But now in the only sense in which it could conceivably be certain that every event has a cause, the proposition is useless to the Causal Theory. For if we asserted in our minor that sense-data are events, we should have to mean 'are events *in the material world*'. and if so, the existence of the material world is not proved, but presupposed. But if in our major premise 'Every event has a cause' we take the term 'event' in its wider sense, and so mean only 'Everything which has a beginning has a cause', then it does not seem at all clear that the proposition is true.¹ At any rate we are much *more* sure of the existence of the material world than we are of the truth of this proposition.

¹ Cf. Kant's *Third and Fourth Antinomies*

CHAPTER V

THE NATURE OF SENSE-DATA

BEFORE we proceed any further with our main inquiry concerning perceptual consciousness and concerning the relation between sense-data and material things, it may be worth while to say something about the nature of sense-data themselves. Two things are already clear: first, that they are not universals; what I sense is not redness, but a red something, an *instance* of redness. And they are not what Cambridge writers call facts, and what Cook Wilson (I think) calls attributes.¹ That the noise is loud is a fact about a sense-datum, or an attribute of a sense-datum: but no one would say that it *is* a sense-datum. It is not what I hear, or auditorily sense. What I hear is the noise. Facts are not heard, but recognized or 'judged'. (Perhaps there is no hearing without judging, but at any rate they are different.²) The noise is clearly a *particular existent* or what Mr. W. E. Johnson calls a *substantive*: something which has attributes, something about which there are facts, but not itself a fact or attribute. And the same applies to all other sense-data.

But what sort of particular existents are they? When we call them particulars, this does not of course imply that they are substances, though it is compatible with their being so. That which *exists* need not *persist*, as substances do, nor need it have the causal and other characteristics proper to a substance. All substances are indeed particulars; but not all particulars are substances. A 'substantive' need not be (though it may be) a 'continuant'. An earthquake, for instance, or a lightning-flash is a particular: but neither is a substance. Most particulars, however, if they are not substances, seem to be 'of'

¹ *Statement and Inference*

² I have already referred to the extraordinary notion which seems to be prevalent, that if A and B are inseparable they must be the same. But in that case there would be no A and B to be inseparable. And from the side of the inquiring mind, the more closely connected they are, the more urgent is the need for emphasizing the difference between them.

or 'in' substances in the sense of being phases (or states ¹) of substances. Indeed, it is commonly thought that *every* particular is either a substance or a phase of a substance. This does not seem self-evident. Why should there not be particulars which are not phases of anything else, and yet are not substances? It seems to me that a *class* is an instance in point: and a sense-datum might be another, though of quite a different sort.

Thus we are confronted with the following questions: (1) Are sense-data substances? (2) If not, are they phases of substances, and, if so, of what substances? Are they, for instance, events in the mind or in the brain of the sentient? (3) But if they are phases of nothing, and are not themselves substances, can we give any further account of them?

These questions are very difficult. But (contrary to common opinion) they are also very unimportant. So far as the main theme of this book goes, it really does not matter how we answer them. What concerns us is not the *nature* of sense-data, but only their *relations*: their relation, first, to the material things to which they somehow 'belong'; and secondly, their relation to the perceptual act, that is, their 'presentative' function, by which they help to make us conscious of these material things. Now whether they themselves are substances or phases of substances or neither, whether they are mental or physical in their nature, makes no difference to those relations and to that function.

This has sometimes been ignored. People have thought it necessary to maintain at all costs that sense-data are physical, in the belief that if they were mental we could have no consciousness of the external world. But suppose that they were, in fact, physical, i.e. that some form of Naïve Realism was true: even so, if they did not *present* the external world to us, we should still be cut off from all consciousness of it, and the fact that they themselves happened to be *parts* of that world would not help matters in the least. On the other hand, they might perfectly well perform their presentative function without being themselves parts of that which is presented or even being like it ²; so long as they do perform it, it does not matter what their nature is.

¹ A phase and a state seem to me to differ only in duration. A phase is a short-lived state, and a state is a long-lived phase.

² Just as written words may enable us to recall long-past events, though they are themselves neither past nor events.

In short, questions about the nature of sense-data belong not to the Theory of Perception but to Metaphysics. Yet they are bound to engage our curiosity, and it is worth while digressing to discuss them. For the purposes of the discussion we shall obviously have to assume the existence of various material objects, particularly of living creatures, although we have not yet been able to give a satisfactory account of the way in which we are conscious of them. But as we hope to offer one later, and as in any case we certainly do have this consciousness, whether philosophers succeed in understanding it or not, perhaps this lapse from strict methodological propriety may be pardoned.

We shall find that it is the extended sense-data, those of sight and touch, which give us the most trouble. And there is a special preliminary difficulty about them which we must clear up before we can approach the main questions of this chapter. Obviously some other characteristics belong to them over and above colour and premency, what we may vaguely call 'spatial' ones: but the puzzle is, how exactly to describe these.

We may try to bring out the difficulty by going back a little. Suppose I have the experience commonly called seeing something red. What exactly is it that is red? *Something* must be red, for whatever else is uncertain it is certain that there exists at that moment an actual red particular. But how are we to describe that something, i.e. what other characteristics can we attribute to it besides redness? It cannot be a material object, e.g. a tomato; and, as we have seen, it certainly need not be (perhaps cannot be) part of the surface of a material object; for I may be having an illusion or even an hallucination. It is true that in all seeing, even in hallucination, a material object is *taken* to exist by the sentient. But there may be no real object. And how can an unreal tomato be really red? Further, in any single perceptual act, even though it is destined to be overwhelmingly confirmed by subsequent acts, the reality of the material object is doubtful, whether the percipient actually entertains the doubt or not. But that something is actually red (in our instance) is not doubtful at all: it is as certain as anything can be. Now how can a certainly real quality qualify a doubtfully real entity? Plainly it cannot.

On these grounds we have been obliged to maintain that what is certainly red is not the material object, real or osten-

sible ; thus when we are asked to say what it is that is red, i.e. to attribute to it other characteristics over and above bare redness, we cannot answer by mentioning characteristics like sphericity, such and such a mass, such and such a chemical structure, which characterize the material object. What then is this red something? Surely it must have some other qualities: it cannot just be red and nothing else. The obvious answer is, it is a *surface*. When I look in the mirror, by this account, what I am indubitably certain of is the existence of a round red surface, which I take to be coincident with the physical surface of a certain tomato (though in fact it is not). But this will not do. How can there be an actual particular existent which is just a coloured surface? A surface must be the surface of something; and not merely that, it must be the surface of some material thing. Indeed, there is really no such entity as a *surface*; there are only solid things thus and thus *surfaced*. 'Surface', it is true, is a substantive in grammar: but it is not the name of a particular existent, but of an attribute. But here by hypothesis (for we are still talking of an illusory sense-datum) there is nothing to be surfaced¹: therefore there is no surface. There is indeed an ostensible thing and it is ostensibly surfaced. But there is no real thing and therefore no really surfaced one. Real 'surfacedness' can no more characterize an unreal object than real redness can.

Again, from the side of the mind, the consciousness of a surface is but the first stage in the consciousness of a material object; the first, in that one is clearly conscious of this attribute while one is as yet only dimly conscious of the rest, e.g. one is conscious of the object's roundness and flat-toppedness, while one is still uncertain how many legs it has, what it is made of, and whether it is rigid enough to sit on. Now this consciousness of the object is not acquaintance (as the consciousness of the red something is) nor is it any other kind of knowing. It is but provisional acceptance, partly determinate and partly indeterminate, and it is subject to correction throughout: it may well turn out that some or all these characteristics do not really belong to the object or even that it does not exist. But obviously we cannot be acquainted with that which is unreal, nor with its equally unreal attri-

¹ We need not waste time refuting the view that it is the surface of the mirror which is red. This is just false. The red something, whatever it is, is obviously *behind* the surface of the mirror, if it is anywhere in the material world at all.

butes, for instance its surfacedness, or surface. This surface, then, is not part of what is indubitably present to the mind. 'But the red is indubitably present, why not be content with that?' To this we must reply, *red* cannot be used as a noun, for red qualifies something. And to speak of a red *content*, or again of a *colour* (not meaning a species of colour—which is the usual meaning—but a particular somewhat) is simply to ignore the difficulty. It is quite clear that the so-called 'content' has other characteristics besides redness, and we ought to be able to say what they are.

Here, then, is our paradox. We are certainly acquainted with an actual something having a certain quality. And we are sure that this something has other characteristics as well, which it is natural to call spatial. But it seems impossible to say what these other characteristics are.

And we have found that there is a further paradox. It is natural to say that what we are acquainted with is an actual *surface* of such and such a shape, but in many cases there is nothing for it to be the surface of.

We may seek a way out of the difficulty by saying that the *whole field of view* is what we are acquainted with: that it is this which is variously coloured, and has various spatial characteristics. As to its spatial characteristics, we shall point out that the field as a whole is a solid of sorts, though none of its parts are. The field as a whole constitutes a kind of hollow solid, with some parts more protrusive than others. In fact, it may be said that our coloured surfaces *are* surfaces of a solid after all, but they are *inside surfaces* of a solid. Even in those cases when there is no material solid for them to be outside surfaces of (i.e. in illusion and hallucination), they are still *inside surfaces* of that hollow solid which is the visual field as a whole. And is not this sufficient to make them geometrically respectable? This *visual sphere*,¹ as we may call it, is something that we carry about with us whenever our eyes are open. It plays the same sort of part as our skin does in touch. Only it is, so to say, much more plastic than our skin: it expands to a great size, and again contracts, and it modifies its interior into various shapes. Its inside surfaces are always *taken* to be the outside surfaces of objects, and to be so taken is its function or end. It is a sort of pseudopodium by which the percipient grasps the world of bodies.

¹ I do not mean that it is always literally spherical in shape, though it sometimes is. Cf. Reid's chapter on *The Geometry of Visibles*.

But some parts of its inside surface, though taken to be outside surfaces of bodies, are not really so. Just occasionally the whole visual sphere is in no part of it the surface of anything, though taken to be. An instance is a perfectly uniform blue sky. The blue-lined vault is taken to be the surface of a concave body : but there is really no such body.

This theory, we may note, is already adumbrated in the current statement, already referred to, that visual sense-data possess *multiple and not simple location* : a colour it is said is not just on a surface but on a surface 'from a place' (the place being the point of view from which we see it). This, however, is incomplete. We ought to say, that in any given field of view a colour is in a surface from a place from which the other colours are in surfaces : there are, as a rule, *several* coloured surfaces in the field of view, and each is from a place : but not only so, all of them are from the *same* place, and it is this being from the same place which constitutes them one field of view.¹ We might call this 'Convergent Location' : or again we could say that visual sense-data have a 'centripetal' quality.

(We could treat the perfectly uniform blue sky as a limiting case. Here there is only one colour : but it is still at a number of places from the same place ; it is not simply at *a* place from *a* place.)

But this doctrine of a visual sphere or veil is too ingenious—or not quite ingenious enough. We have indeed provided a solid for colours to be on the surface of : but it is not the right sort of solid. For it is hollow, yet it lacks a proper back. It has a near side, but no proper farther side. Or rather, in parts it *has* a farther side. For some parts of its inside surface, we are told, are coincident with surfaces of bodies, and these do have further sides. But some parts are not, for some of our sense-data are illusory and some hallucinatory. And in those parts the visual sphere, though beautifully decorated on its inside, has absolutely nothing behind, and is but a hollow sham. In complete hallucination, i.e. in those cases where the whole visual field is an hallucination (as in the visions of delirious and lunatic persons), the visual sphere is bad not in parts, but all through. It is a hollow which is hollowed out of nothing.

Thus the doctrine before us has only changed the form of our difficulty slightly, and has not solved it. Instead of asking, How can there be a surface which is not the surface of a

¹ We should also have to add 'at the same time'.

solid, we have now to ask, How can there be a front surface without anything behind it? Indeed this is what the original question was really intended to mean. And we have the other question still on our hands: how can there be an actual colour without anything which is coloured? (If the visual sphere had been a *bona-fide* solid this question would have been answered as well.)

Similar objections will apply to the doctrine of Professor Kemp Smith, that what we are indubitably aware of in sight and touch is the surface of a *region of space* (which may or may not turn out to be occupied by a material object) and that is this region which is coloured. The region, it may be said, is certainly actual, and has an actual surface, whether there is any object in the region or not. But this is to treat the region of Space as if it were itself an object or substance: whereas the truth surely is (to put it paradoxically) that there is no such thing as Space but only *spatial objects*—that is, objects extended, standing in various relations of distance, direction and size to one another, and able to move in various ways. In other words, 'Space' is what Cambridge philosophers call an incomplete symbol: it is not the name of anything, but stands only for a set of facts about things. And the term 'a region of space' stands for a set of facts about a certain restricted number of things. Now a set of facts cannot possibly be red or hard, nor can it have a shape or size. Perhaps the Germanic word *Room* brings out this point better: room is always room *for* something—it is not itself a something. Or again for 'region' let us substitute its synonym 'place', and it is clear at once how very strange and paradoxical Mr. Kemp Smith's view is. Can a place be said to have a shape or a surface, and can it be coloured? ¹ Surely not: it is obvious that 'place' like 'Space' is an incomplete symbol; 'this place' does not denote a particular existent, as 'this table' or 'this noise' does. There are no places; there are only things 'placed' and 'displaced'. Or again, a place has no being *per se*: it is only a place *for* something. And if we insist upon saying that a place is a particular existent, as it must be in order to be red and thus or thus surfaced, we shall have to find some other place for it to be situated in, and we shall be committed to the absurdity that Space is itself in *Space.

¹ When we speak of a 'hot place' or a 'dirty place', we obviously mean a hot or dirty portion of some object or collection of objects.

Thus we seem to be stuck fast in a contradiction. On the one hand it seems impossible to deny that visual and tactual sense-data are surfaces; yet on the other hand it seems impossible to affirm it, since a surface must be the surface of some object, and in illusion and hallucination there is no object for it to be the surface of. Obviously we must either be wrong in saying that visual and tactual sense-data are surfaces: or else the term 'surface' must be ambiguous, and must have some other sense in which it does not mean the surface of some object. What, then, led us to say that they are surfaces? Obviously the facts that they have size and shape and positions in relation to one another. What we must do is to find some word which sums up these indubitable facts, without committing us to the conclusions which the use of the term surface implies. It is not difficult to suggest one. We might say that visual and tactual sense-data are *expanses* or *extents*; we are then free to consider the possibility that some few and as it were privileged expanses (normal or non-illusory ones) are *also* surfaces of objects or in some way constituents of these: but we are no longer committed to the obviously false conclusion that all are. No doubt almost all are taken to be so. But they need not really be what they are taken to be. And if some one asks us, How can there be a flat or protrusive expanse which is not at the same time the surface of some object, the reply is, Why not? It is just a fact that there are these expanses, and that some of them neither are nor are coincident with physical surfaces; and whether it surprises us or not, we must make the best of it. But we ought not to be surprised at it, for the existence and expandedness of visual and tactual sense-data is absolutely certain, and the falsity of Naïve Realism is as nearly certain as anything on Philosophy can be; we should reserve our surprise for that which is dubitable.

The distinction between an expanse and its quality of colour or premency, or between the quality and its expanse, is what Hume describes as a *distinction of reason*.¹ Since a red square expanse resembles other red ones which are not square, and other square ones which are not red, we distinguish between the redness and the squareness, or (in the like way) between the redness and the size. But we cannot conceive that a colour or

¹ *Treatise of Human Nature*, Book I, Part I, section 'of Abstract Ideas', at the end (Everyman Ed., pp. 32-3).

pressure could *exist* without being expanded, or that an expanse could exist without being coloured or prement.

At this point it may be well to offer a few remarks upon a question which we shall discuss more fully later on (in Chapter VIII). Does the distinction between surfaces and expanses commit us to a corresponding distinction between Sensible Space (or rather spaces) on the one hand, and Physical Space on the other? Such a conclusion would obviously be very awkward. If the Space of Sight, for instance, is distinct from Physical Space, then (this is what is meant here by the use of the word distinct) we shall have to say that visual sense-data can stand in no spatial relations to material things and are accordingly nowhere in the material world at all: indeed, they cannot even *seem* to stand in such relations, just as the interval between a field-marshal and a private cannot even seem to be as long as that between the two ends of a foot-rule. Yet it is certain that visual sense-data, and tactual ones too, do seem to be in some sense or other constituents of the surfaces of material objects—apart from this ostensible relation to objects they would not be the sense-data that they are. And we shall argue later that in certain specifiable cases they actually are so, not indeed in the way in which the front surface of a material thing may be said to be a constituent of the whole surface, but still in some way,¹ into which we must inquire later. If so, it would seem that these sense-data at any rate must be in Physical Space. On the other hand, it is hard to believe that the sense-data which occur in visions and hallucinations are anywhere in Physical Space at all. For it seems obvious that only what is physical, i.e. material things and their parts, can be in Physical Space. And, if so, even in the mildest illusions, for instance those of reflection and perspective, the sense-data it would seem cannot be anywhere in Physical Space; though of course in all illusions and hallucinations they are taken to be constituents of the surfaces of bodies, which (if they existed) *would be* in Physical Space. Otherwise we should not be having an illusion or hallucination at all, but should merely be sensing an odd sort of sense-datum.

If this is so, we seem bound to conclude that some visual and tactual sense-data are in Physical Space, and others are not.

¹ Perhaps in an odd way. It might, for instance, turn out that it is only by virtue of its membership in a certain *group* of sense-data (belonging to different sense-fields) that a single sense-datum could be said to be a constituent of a physical surface.

They are in Physical Space if they are constituents of the surfaces of bodies ; otherwise they are not, though of course they must still have places in their own fields of view. Nor shall we be able to discover by inspection of any *single* visual field whether the colour-expanses which compose it, all or any of them, are in Physical Space or not. Such inspection will only tell us that a number of colour-expanses exist, and are related to each other in such and such ways ; and of course they do all *purport* to be constituents of the surfaces of objects, and therefore to be in Physical Space. But this claim which they all make can only be confirmed or refuted by the comparison or ' synthesis ' of a number of visual fields—an activity which we shall discuss in a later chapter. And it might even turn out in a particular instance that the whole visual field was hallucinatory, in which case neither it nor any of the expanses in it will be anywhere in Physical Space at all.

Thus the question ' Are there Visual Spaces distinct from Physical Space ? ' cannot be answered in any simple way. If we answer ' Yes ', we may be taken to mean no visual sense-datum can be in any way a constituent of the material world ; and this is false. If we answer ' No ', we may be taken to mean that whatever has shape and size is somewhere in the physical world—in short, is physical. And this, too, is false, since it would make illusion and hallucination impossible. Thus the only possible answer will be ' There is a Space of Sight, but it is not wholly distinct from Physical Space since some colour-expanses fall within both '. This qualification, however, is perhaps in conflict with what is ordinarily meant by ' the Space of Sight '. It is better to avoid the antithesis altogether, since it over-simplifies the facts : and to distinguish instead between *visual position* on the one hand and *being a constituent of a physical surface* on the other, with the proviso that the same colour-expanse may have both characteristics. And in any case it is misleading to use the substantival term Space at all, whether with an adjective or without one. (So also with ' the Space of Touch '.)

We must however notice in conclusion that some people use these phrases in quite another sense. When they speak of ' Visual Space ' they only mean that there are certain *propositions* which sense-data lead us to entertain concerning the shapes, sizes and positions of material objects, and that these propositions are liable to be erroneous in certain systematic ways (e.g. in a ' perspectival ' way). And when they say that

Tactual Space differs from Visual Space they mean that tactual sense-data lead us to entertain propositions different from and sometimes incompatible with these. This of course is quite true, but to speak of 'a space' when you mean a set of propositions about spatial characteristics is confusing and inconvenient, to say the least. In any case, in so far as some of the propositions in question turn out to be true, it must be admitted that Sight-Space and Touch-Space are in part identical both with Physical Space and with each other.

Having dealt with this preliminary difficulty, we can now turn to our main problem. And first, it is fairly clear that sense-data are not *substances*. A colour-expanse, for instance, or a smell is created *ex nihilo* when suitable bodily and mental states are present; and when the bodily and mental state comes to an end, the sense-data vanish again *in nihilum*. In this respect, sense-data are unlike any substances known to us. It is not as if they were put together out of pre-existing particulars, and resolved again into these. They come into being at a stroke, and go out of being at a stroke.

Moreover, even creation is too mild a word. For according to our ordinary notion of creation (whether there are any instances of this notion or not), the thing created, once it has come into existence, goes on existing of itself, and has, so to speak, an intrinsic being of its own. But with sense-data this does not happen. It is not enough that there should be the appropriate cerebral and mental state at the beginning; it is not as if the body and mind of the percipient, having started the sense-datum off on its career could then (so to speak) leave it to itself, as the God of Deism was supposed to have left His creatures. On the contrary, they must *continue* in that state if the sense-datum is to continue in existence: if I shut my eyes, or change my mental 'attitude', the sense-datum ceases to be. When I open them again, or return to my previous 'attitude', a new one comes into being, exactly like the old perhaps, but still numerically different from it.

It is true that a brief interruption of the *physical stimulus* is not by itself sufficient to annihilate the sense-datum. A blink for instance, or the momentary obscuration of the object by some other object which passes in front of it, as when a cat walks in front of the coal-scuttle or a bough waving in the wind momentarily gets in the way of the view, would not necessarily

annihilate the sense-datum of the coal-scuttle or of the distant mountain. Indeed, a gap is in some cases even necessary. When we hear a short spoken sentence, what we hear is one auditory sense-datum, with a certain form or pattern. And the nature of the pattern requires that there should be brief intervals of silence between the words : otherwise, what we sense is not one sense-datum, but a jumbled series. (The same will apply to a bar of music and to such sounds as the ' tick-tock ' of the clock.) The rule seems to be, that so long as the same act of perceptual consciousness remains, the same sense-datum remains ; this is in all cases consistent with a short break in the physical stimulus and in the consequent cerebral state (it is impossible to say in general how long the break can be), and sometimes even demands it.

This consideration does seem to refute the view that sense-data are *momentary* existents. It might be argued that since the sense-datum ceases to exist as soon as the mental and physical states upon which it depends come to an end, therefore even when these states continue throughout a period (as when we watch something intently throughout a certain half-minute) there is not really a single continuing sense-datum, but only an uninterrupted series of sense-data exactly resembling each other. For, it may be said, at any moment during the period we *might* have stopped watching, or the stimulus might have ceased, and if either of these things had happened, the sense-datum *would* have been annihilated : and does not this show that the sense-datum existing at any moment was wholly dependent for its existence upon the cerebral and mental state of that moment, so that there was not one sense-datum persisting throughout the period, but a continuous process of annihilation and re-creation ?

The conclusion, however, does not follow. The argument ignores the fact that the unity of a sense-datum—that which makes it *a* sense-datum—depends in part upon what is called its form-quality, and that this in turn depends upon the ' meaning ' which the sense-datum has for us : i.e. upon the perceptual (or otherwise ' meaningful ' ¹) disposition which the physical stimulus evokes in us. Certainly if the act of perceptual

¹ As when a spoken word brings to mind a certain concept. Here, too, the noise gets its form-quality from its ' meaningfulness ' (if we had not understood the language, it would not have stood out as one individual auditory datum, but would have been lost in the general clatter). In this case, however, the meaning is *non-perceptual*.

consciousness¹ is momentary, then the sense-datum is momentary too : but it is very doubtful whether any mental act can be literally momentary, and certain that most are not. Thus it is highly probable that every sense-datum has a finite duration, and certain that most have.

On the other hand, it is also clear that the duration is at the best very small, probably never more than a few seconds (it will depend upon our 'span of attention' which is notoriously never great) ; so that although the annihilation and re-creation of sense-data is not continuous, it certainly does happen and is indeed extremely frequent. Thus these considerations about form-quality do not materially weaken our argument that sense-data, being subject to creation and annihilation, cannot be substances.

Moreover, even if there is not continuous creation of sense-data, there is a process very much like it which may be called their *conservation*. A sense-datum does indeed persist and retain its numerical identity through a certain period, but, so to speak, this persistence is not *its* fault, being entirely dependent upon the persistence of the originating conditions cerebral and mental, and ceasing when these cease. Now it is true that in the case of an ordinary substance, e.g. an organism, certain states of other things are necessary conditions of its persistence, e.g. a certain kind of atmosphere and a certain temperature in surrounding objects. But these conditions, though necessary, are not sufficient : certain internal states of the organism itself are also necessary. With the sense-datum, on the other hand, the external conditions are not only necessary but sufficient to its preservation. It does not contribute to its own preservation in any way whatever. its persistence, like its origination, is wholly 'parasitic'. And in this it is wholly unlike anything ordinarily called a substance.

Further, though sense-data persist through time, it is very doubtful whether they can be said to *change*. Consider, for instance, the sound 'tick-tock'. We cannot say that this changes from 'tick' into 'tock'. For until the 'tock' has arrived, the sense-datum is not there at all. The transition from tick to tock is not a change *in* the sense-datum ; it is the becoming *of* the sense-datum. Indeed, if we may parody the remark of Solon,² we may say that the sense-datum does not

¹ Perhaps it may be well to remind the reader that I am drawing a sharp distinction between the act of *sensing* and the *perceptual* act.

² Herodotus, Book I.

exist until it is dead. But now if sense-data cannot change, they obviously cannot be substances, and though they persist through time, they do not persist in the way that substances do.

On these grounds it seems clear that sense-data are not substances, but *events* or *occurrences*.¹ (Perhaps it would be more accurate to speak of 'colorations' or 'colour-geneses' rather than colour-expanses, and of 'sonifications' and 'odorifications' instead of sounds and smells. But as this usage is very clumsy, we shall not adopt it.) We may still call them particular existents, for happening or occurring is one way of existing: but they do not exist in the way in which tables or trees do.²

Now if sense-data are not substances but events, it is natural to ask what substance they are phases of. For it is commonly held that every event is a phase of some substance or, as Mr. Johnson says, 'inheres in' it.³ To this question three answers have been offered:

1. That they are phases of the objects that we perceive by means of them (are 'physical').
2. That they are phases of the percipient's mind (are 'mental').
3. That they are phases of the percipient's brain (are 'cerebral').

¹ In Mr. W. E. Johnson's language, they are *events*, not *occurrences* (*Logic*, vol. II, p. xxi). For an occurrence is characterized by only one quality throughout its extent, and a sense-datum always has several qualities. Indeed, a single sense-datum may even display two contrasted determinates of the same determinable in different parts of itself: for instance, it may be black and white. Thus when we look at a black and white cat, we sense one single sense-datum which is black in one part and white in another.

² Some readers may think that I have gone to excessive pains in disproving a view which is obviously false. Who ever thought that sense-data were substances? The reply is that some philosophers have not clearly enough distinguished between those particular existents which are substances and those which are not: accordingly it is supposed that when we say that sense-data are particulars, we mean that they are the same sort of beings as chairs or trees, and it is accordingly inferred that there are no such entities.

³ Mr. Johnson distinguishes between *characterizing* which is a relation between 'substantives' and 'adjectives', and *inherence* which is a relation between events and continuants. Thus in the case of inherence, both the terms of the relation are 'substantives'. Since 'inhering' is not always distinguished from characterizing, it is necessary to warn the reader that we shall use it here in Mr. Johnson's sense.

The first answer, that of Naïve Realism, has already been disposed of. It is true that there is a very important sense in which sense-data may be said to 'belong to' the objects which are revealed to us by their means. Indeed, the elucidation of this relation is the main task of any writer on Perception. But it is quite clear that they do not belong to them in the sense in which events 'belong to' the substance of which they are phases. Moreover, there are some sense-data (viz. hallucinatory ones) which are entirely wild, and do not belong in either way to any external object - but these are none the less events, and have as good a claim as normal sense-data to be phases of some substance. We may therefore turn to the second and third answers.

Now both these answers are paradoxical. Many people probably hold that the second is not worth discussing, and there are no doubt some who think the same about the first. Is it seriously suggested that we should return to that confused psycho-physiological idealism for which Descartes (among his other sins) is usually held responsible, and from which recent philosophy has happily broken free? To this we may reply, first, that a sense-datum is in any case different from a material thing¹; and even if sense-data turn out to be mental, their fate does not in the least imperil either the reality or the knowableness of the world which is revealed by means of them; and secondly, it may be that neither the mind nor the brain is quite the thing that we ordinarily take it to be. The first point is obvious, and needs only to be stated: but the second clearly requires discussion. To this discussion we shall now address ourselves. For the moment we shall simply ask what *meanings* can be given to the statements 'that sense-data are mental' and 'that sense-data are cerebral'. If it turns out that they are susceptible of an intelligible meaning, we can then go on to consider what *arguments* can be brought forward in support of them.

Let us begin by considering the statement that sense-data are mental, or (in the language of the old philosophers) that they are affections of the mind. That they *depend* in part at least on the mind, i.e. that they would not be if the mind were not, is fairly clear. But this is not the same as saying that they *are mental* or inhere in the mind. The becoming-liquid of the

¹ Even if every material thing consists wholly of sense-data (as the Selectivists and the Phenomenalists hold), no single sense-datum is a material thing, but only a complex group.

wax depends upon the fire, but does not inhere in it : it is the wax and not the fire that becomes liquid. On the other hand, dependence upon A is of course *compatible* with inherence in A. Thus my fears both inhere in myself and depend on myself, e.g. on my beliefs.

But if the statement before us does not merely mean that sense-data depend upon the mind, can we say what it does mean ? That sense-data are mental is certainly a very paradoxical assertion at first sight ; and it is surprising that so many philosophers have been content to accept it without question. (No doubt some have thought that because awareness of is mental, what we are aware of is mental too¹ : but one can hardly think that they have all been so foolish.)

Is it not odd to say that the mind is loud or sour or smelly ? Is it not odder still to say that it is my mind or myself which is round and smooth when I pick up a billiard ball ; or that I am striped when I look at a tiger ? But when we ask ourselves why these statements seem odd, it is not very easy to say. The answer seems to be in the first place that loudness, sourness and stripedness are very *unlike* the other characteristics which we are accustomed to attribute to the mind and to mean by the word 'mental'. Being loud is very unlike inferring or wondering or wishing : and being striped is not at all like the being aware of what is striped.

But this objection is not a decisive one. There is no particular reason why the same subject should not have characteristics (and undergo processes) which are very unlike one another : or, to put it otherwise, there is no reason why very diverse processes should not be united within one complete being. Moreover, the difficulty is at least partly one of terminology. The words 'mind' and 'mental' are used in two senses, a wider and a narrower. We sometimes use 'mind' as a synonym for 'self' or 'ego' and 'mental' as a synonym for 'psychical' or 'spiritual' : at other times we mean by mind only certain faculties and activities which belong to that self or ego—faculties and activities which have a certain common character, let us say a cognitive character.² If we adopt

¹ Cf. the argument : who drives fat oxen must himself be fat.

² I am aware that the word cognitive has been objected to, on the ground that it ignores the distinction between knowing, believing, opining, and taking for granted. yet although these are certainly species of one genus, I think it is quite clear that they belong together. Knowing is, as it were, the norm from which the others fall away, by relation to which alone they can be understood.

the narrower usage, the doctrine before us does not say that sense-data are mental : what it says is that they are psychical or spiritual. And this is not nearly so shocking. For there are many psychical processes which though bound up with cognition (as indeed colour-expanses, sounds, pressures and the rest are closely bound up with perceptual consciousness) cannot themselves be called cognitive : for instance, choosing, and feeling. And, as we shall show presently, sense-data are not so utterly unlike feelings.

But there is a further objection which applies to expanded sense-data and not to the others. If visual and tactual sense-data are processes in the self, the self must be expanded. And if it is expanded, must it not have parts ? And here it may seem we have not merely unlikeness, but downright incompatibility. For how can I have parts and yet at the same time possess that unity of consciousness which is necessary to the apprehension of any manifold whatever, whether simultaneous, successive or timeless, and, among other things, to the apprehension of expanses themselves ? In so far as I am the subject of consciousness, must I not be an absolutely identical unit, to which the notions of whole and part have no application at all ?

To this we must answer, the word ' part ' is either radically ambiguous, or at any rate there are several different species of whole-part relation.¹ (It is not necessary for us to determine which.) The parts of a material object are themselves material objects : each of them is a substance, just as the whole is, and each is capable of existing ' on its own '—indeed, actually did so before the whole came into being—and will do so when the whole is broken up. Even now, while the whole still remains, each possesses its own causal characteristics. But the parts of the field of view or of touch are not of this kind at all. The whole is not a substance, and the parts are not substances : the whole did not come into being by the collocation of its parts, and when it ceases to be, the parts will not survive. The whole and its parts come into being and go out of being together and as it were at a stroke. And the parts neither have nor will have any causal efficacy whatever. We may sum up the difference by saying that though the field of

¹ It seems to me that some of the difficulties concerning the relation between ' life ' and ' mechanism ' come from ignoring this. We take it for granted that a certain type of whole-part relation is the only real one, so we are greatly puzzled when we come across another type of oneness, and feel bound to explain it away as an illusion.

view is *multiple* yet it does not consist of *many things*. And the same applies to any single sense-datum within the field.

This distinction gets over the difficulty. If the fields of view and of touch, and every sense-datum within them, consisted of many things, then sense-data could not possibly be psychical: the having of parts in that sense would certainly be incompatible with the unity of consciousness. But the mere fact of their being multiple, or containing a multiplicity, is not incompatible with it. Indeed, on any view the unitary and identical self contains a multiplicity of faculties and activities.

It seems, then, that there is no *a priori* objection to the view that sense-data are psychical. We must now examine an ingenious and subtle attempt to develop that view further, and to show what sort of psychical events they are. The suggestion is that sense-data are the 'contents' of *Erlebnisse* or *feelings*: that they are certain ways in which we feel. Or, again, we may say they are 'what' we feel (as opposed to the process of feeling) provided we realize that the 'what we feel' is only an internal accusative after the verb to feel. Thus when we hear a loud noise it is not so much that we *are* loud, as that we *hear loudly*.¹ Again, when we see the tiger, it is not true that we are striped: the truth is that we see or feel in a striped manner, just as on other occasions we feel in an angry manner. Words like see and hear stand for various determinable characteristics of feelings; words like striped and loud, for the determinate forms of these. Thus 'striped', 'red', 'loud' will all be *incomplete* adjectives. Taken by themselves, they will not stand for characteristics which anything actually has: there will be nothing in the Universe which is red or striped or expanded. We shall only be allowed to use them in conjunction with the verb 'to feel', which they qualify either as adverbs, or as a kind of internal accusatives ('I feel hot'). This is sometimes expressed by saying that sense-data are but abstractions from sensations. It will follow that sensing is an acquaintance with *ourselves*, i.e. a kind of intuitive introspection.

Now no doubt it is paradoxical to say that I *am* striped and expanded when I look at the tiger: but may it not be true that

¹ I take it that this is what Professor Stout means by saying that sense-data are *presentations* and are *immediately experienced*. But both these terms seem to me singularly unfortunate. A presentation ought to be a process of presenting: and immediate experience ought to mean immediate awareness of something, which is just what Dr Stout appears not to mean.

I visually feel in a striped and expanded manner? Is this in any way incompatible with the unity of consciousness?

Before we discuss this suggestion, we must ask what is meant by the words *feeling* and *Erlebnis*, which we may take for our purpose as synonyms. It is clear in the first place that feelings are processes in myself. But to feel or 'live through' a process is not the same as barely *passing* through it. To live through a process, we must be intuitively aware of it while it is occurring; moreover, we must be aware that it is a process in ourselves and not in something else. One is tempted to add that the awareness and the process are so intimately united that they form one organic whole: for example, could one be angry without being aware of the fact? To say that a man was angry without being aware of it (or 'unconsciously') seems only to mean that he acts now *as if* he were angry and will act in the future as if he had been, not that he really is so. His being unaware of the process in himself seems somehow to make an essential and not a merely accidental difference. And yet this cannot be right. For in all other cases, our awareness of a thing is merely accidental to that thing: and to say that a thing and our awareness of it constitute an organic whole is really to say that we are *imagining* it and are not *aware* of it at all.¹ The solution seems to be this. every phase of the process is accompanied by the awareness of the *previous* phases: and though in a process A B C, the fact that B is accompanied by the awareness of B makes no essential difference to it, yet the fact that B is accompanied by the awareness of A may very well make an essential difference. B and the awareness of A may constitute an organic whole, though B and the awareness of B cannot. This seems to be what actually happens when we 'live through' a process (and indeed the very word 'through' signifies as much). Every phase of the process is coloured with or includes as an essential part an awareness of the previous phases, and of the fact that they inhered in the same self that is now aware of them. This 'snowball-like' character of including within itself the awareness of its own past is what distinguishes felt fear, for instance, from unfelt or unconscious fear, and distinguishes them so sharply that the word 'fear' can only be applied to the second in an equivocal or at best an analogical sense. Feelings have two other

¹ Of course my awareness of A is essential to the being of the whole complex 'awareness plus A'. But it is not essential to the being of A taken alone. the whole, then, is not an organic one.

important characteristics. One is their *intentionality* or objective reference. We feel angry *with* somebody, and are afraid *of* something. The other is their *passiveness*. They just come upon us of themselves and without our choice: they are something that we endure, not something that we do. (Hence Kant and other moralists rightly hold that it is impossible to say 'you ought to feel thus or thus'.) And hence perhaps feeling and *Erlebnis* are not after all wholly equivalent terms. For we should be said to *erleben* not merely those passive and unchosen processes, but activities as well.

Now can we say these things of sense-data? Can we really compare sensing a red expanse to feeling or living through an emotion?

It is true that the occurrence of sense-datum No. 2 is accompanied, as a rule, by the awareness of sense-datum No. 1 (as well as by the awareness of No. 2 itself). But I do not think it can be said to contain this awareness as an element; nor again can we say, alternatively, that the occurrence of No. 2 and the awareness of No. 1 together form an organic whole. For instance, when I see something moving rapidly towards me, the event which is the coming into being of the large bright expanse now before me does not seem to contain, or to form an organic whole with, the awareness of the coming into being of the smaller less bright expanse which preceded it.

Further, in feeling or living through an emotion we are not merely directly aware of the process which we are undergoing; we are also directly aware that it is a process *in us*. But in the case of sense-data, this is not so. They may in fact be processes in us, but if they are, this must be proved: we are certainly not directly aware of it. Indeed, so far are we from being directly aware that they are processes in us, that the suggestion strikes every one except a few philosophers as a violent paradox.

There is indeed an apparent exception to this, but on examination it will turn out to confirm what we have said. It is true that we speak of *feeling* hot and of feeling bodily pains, and even of feeling pressures of various kinds: indeed, all tactual, kinaesthetic, and koenaesthetic sense-data are said to be felt. But we speak in this way because we take these sense-data to qualify various parts of our own body, and we ordinarily consider our bodies as somehow parts of ourselves; so that a bodily process is regarded as a process *in ourselves*.¹ On the

¹ The identification of the mind with the body is clearly closely connected with action: thus paralytics who cannot control their own limbs

other hand, it is possible, though difficult, to regard one's own body as just one object among others ; this we do by suspending as far as possible the practical or outwardly directed attitude of ordinary life. In so far as we succeed in this, tactual sense-data and even bodily pains, simply confront us as objects of acquaintance like visual or auditory data we are intuitively aware of them, but we should no longer say that we feel them.

On these grounds it seems impossible to hold that we *feel* red or loud or striped as we feel hungry or afraid. Yet sense-data have certain points in common with fear, anger, and the rest. Let us begin with the positive points in common :

(1) The awareness of sense-data seems exactly like the awareness *in* feelings : it is intuitive, not judicial—still less inferential. It is what we have called acquaintance

(2) In both cases the acquaintance is intimately bound up with another mode of consciousness, which is directed upon a something quite distinct from the entity with which we are acquainted ('external reference').

(3) In both cases that object may be wholly imaginary, though what we are acquainted with itself is indubitably actual : we may have perceptual consciousness of what is not there, and we may be afraid of non-existent dangers.

(4) In both cases, the acquaintance and the process which we are acquainted with seem to have a common cause : the process ' thrusts itself upon our notice '. Hence both feelings and sense-data are sometimes called *impressions*.¹

(5) In both cases, there is what may be called *extrojection*. The characteristics of the event with which I am acquainted gets somehow transferred to the object of the external reference. The table is brown, the tapioca is nauseous ; again, the wind is fearful, and we speak of a pitiful figure and a pathetic situation.

The common negative characteristic is that in both cases what we are acquainted with is, so to speak, ' in the background ' and in a manner ' stands behind ' the object of the external reference. In emotion, I am not interested in the process in myself, but in the object that I am afraid of, angry with, etc. And in perception, I am not interested in the reddening, but in the tomato.

are said to regard them as something alien. On the other hand, those external objects which are under our direct control we regard as part of ourselves. Thus the motorist says : ' I ran over a dog '

¹ ' What was your impression of so and so ? ' ' I disliked him extremely.'

Still, important and interesting though these resemblances are, they do not suffice to show that sense-data are but qualities of *Erlebnisse*, and that when we look at a tomato we are seeing roundly and redly. And, as we have seen, there are certain even more important differences to be taken into account. The theory, then, must be rejected. It is true that one may use the word 'feeling' in an odd sense of one's own, meaning what other people call acquaintance or intuitive awareness. But in that case, red and round will not be adverbs of the feeling, but accusatives of it: they will be what we feel, but what we feel will no longer be equivalent to *the way* we feel, as it was in the doctrine which we have just examined. They will no longer be internal accusatives, but honest or ordinary accusatives. We may add that there is very little to be said for this new sense of the verb to feel (especially when it is confounded with the old one).

The peculiar nature of acquaintance has given rise to another doctrine, or perhaps we should say way of speaking, concerning sense-data, about which a word or two must be said. During many ages it seemed natural to philosophers (and still does to some) to say that sense-data are 'in' the mind. To dismiss this as a mere metaphor for 'apprehended by the mind' is not sufficient. For many philosophers have held that sense-data are 'in' the mind in a sense in which other people and external objects are not; yet other people, external objects, and universals are sometimes apprehended.

The obvious suggestion is that the word 'in' is used to mark the difference between acquaintance and other forms of consciousness: and on reflection we must confess that it is not so very ill adapted for that purpose. What we apprehend in other ways has to be sought out, and as it were fussed after. But what we are acquainted with is just present of itself; there is no need for us to *do* anything. There is no mystery or obscurity in what we are acquainted with; we do not have to ask questions about it or frame hypotheses, we do not even need to make an effort of attention.¹ In particular, there is no need for the activity which Kant called synthesis, which consists in

¹ I have avoided saying that acquaintance is *passive*, partly because this adjective has become a term of abuse and partly because it is actually misleading. Acquaintance is neither *active* nor *passive*, but just *non-active*. Perhaps, however, the mode of attention which accompanies (or rather characterizes?) it might be called *passive*.

'holding together' a number of separately presented items, and discerning that they together constitute a whole of a certain kind. Indeed, it is the other way about. When we are acquainted with something, we are aware at once of its wholeness: it is the parts and not the whole which we have to discover for ourselves, and this discovery is a 'holding apart', not a 'holding together'. In short, acquaintance is intuitive, not synthetic: still less is it discursive, as reasoning is.

The upshot of this would be that the statement we are examining needs only a change of emphasis: the truth being not so much that sense-data are *in* the mind, as that they *are* in the mind, and do not have, so to speak, to be brought before it by a process as the conclusion of an argument, for instance, does.

But perhaps this is not quite all. Not only is there a sense in which sense-data are 'in' the mind; there is a sense in which other things are 'out of' it. Is there not a sense in which we may be said (metaphorically no doubt) to 'go out of ourselves' in other forms of consciousness, e.g. in thinking, and 'not to go out of ourselves' in acquaintance? But what does this metaphor of 'going out of ourselves' (or 'transcending ourselves') really mean? It seems to me to mean passing or growing beyond our present state into a new one. In all forms of apprehension except acquaintance we have to do this; but acquaintance is complete in any one moment. But further, there is no variation in it, as there is in thinking, when we pass, for instance, from questioning to supposing and from this to hypothetical reasoning; or again in volition, when we pass from choosing to wishing and from wishing to desiring. Acquaintance just is, and there is no passage in it. We might describe it as a *standing* awareness, whereas other kinds of awareness are, so to speak, fluent.

These considerations may avail perhaps to excuse the metaphorical statement that sense-data are 'in' the mind, or even (since no metaphor can be perfectly water-tight) to justify it.¹ But we must be careful not to draw unwarranted conclusions from it. The 'in' of course is not that of spatial inclusion. What concerns us more is that it is not that of inference either, though perfectly compatible therewith. From the fact that sense-data are 'in' the mind in this metaphorical sense, it does

¹ Professor Driesch's word 'to have' seems to be the converse of this 'in'. Instead of saying with the old philosophers that sense-data are in my mind, he would say that I have the sense-data. The advantages and the dangers seem much the same.

not even follow that they are dependent upon it (or upon the self) in any way: though, as we have seen, there are other reasons for thinking them so, and there may be other reasons for thinking them inherent in the mind too.

Finally, there is another prepositional phrase which we must mention. It has often been thought that sense-data 'exist only for a mind'. My sense-data, it is said, exist only for me, and yours exist only for you. This phrase may be taken in two ways. It may mean that sense-data depend for their existence or for their qualities upon our awareness of them; this proposition is a gross absurdity, incompatible with the very connotations of the terms 'existent', 'awareness', and 'qualities'. But 'for' may mean something else. It might be suggested that just as written words are only words in the presence of an act of reading, in the course of which they bring before us their meanings: so sense-data are only sense-data in the presence of an act of *perceptual* consciousness, in the course of which they display to us certain material objects (real or unreal). In that case, they depend for their being sense-data not of course upon our being aware of them, but upon their *presentative* character, which comes into existence simultaneously with our awareness of them. And since all presenting is for or to a mind, it may be said that sense-data, being essentially presentative, exist only for or to a mind. If the words were not read by an intelligent being there would be no words, but only black marks on the paper: if the sense-data did not present material objects to a percipient being, there would be no sense-data, but only processes of which we know not what kind, mere chemical changes perhaps or changes 'in the Unconscious'.

But here, again, to be for the mind is not the same as inhering in the mind, and does not imply it, though of course it is compatible with it. The book perhaps is only a book for one who reads it. But no one would say that the reader was divided into chapters. So a visual sense-datum is a visual sense-datum only for a percipient mind, but we cannot conclude from this that the percipient mind is coloured and expanded; nor can we conclude that it is not.

The result of this rather intricate discussion is as follows: The general hypothesis that sense-data are psychical, though surprising at first sight, is in no way absurd. If any arguments can be produced in its favour, we are quite free to adopt it. But the more specific hypothesis that they are feeling-contents

must be rejected. And we may add that if they are psychical, the soul or self must possess other capacities besides those cognitive, affective, and conative ones which are commonly attributed to it.

Let us now turn to the alternative hypothesis that sense-data are cerebral. This, too, seems odd at first sight. To say that when a man looks at a tomato he is acquainted with a reddened portion of his own brain, or with a sounding tract of it when he hears a noise, is very singular. And others besides Bradley find it hard to believe that 'when I smell a smell I am aware of the stinking state of my own nervous system'.¹

But here, again, the difficulty can perhaps be mitigated. Here, again, it turns partly on the fact that the process of becoming red or sonorous is very *unlike* the processes which are ordinarily admitted to be cerebral; and partly on the special nature of expanded sense-data. Let us begin with the first point. Does not the difficulty come at least partly from considering the brain merely as a material thing, that is, as something subject to physical and chemical processes? Such processes consist in very complicated movements of a thing's minute parts, and it is certain that the process of becoming red or sonorous is utterly unlike this. But now it is clear that the brain is not merely a piece of matter. It is also an organ of a living thing. The genesis of colour-expanses or sounds is very unlike freezing or combustion; but is it so very unlike breathing or digesting or the maintenance of bodily posture? At least it has this striking point in common with them: it contributes in a most important way to the survival of various kinds of living creatures. We may indeed (if we please) hold the Cartesian or Behaviourist view concerning the lower animals, though for my own part I cannot think this plausible. But it is very difficult to deny that sense-data play an indispensable part in the survival and self-maintenance of the higher animals, and quite certain that human beings could not get on without them.

Philosophers have been accustomed to discuss the question whether sense-data are physical or mental. Might it not be said that they are neither physical nor mental but *vital*, in the sense in which breathing and digesting are vital? And, if so, is there any reason why they should not inhere in one of the organs of the living organism? And is there any reason why

¹ Bradley was criticizing Case's *Physical Realism*.

the brain should not be this organ? But if they do inhere in it they will only do so in so far as it is an organ, not in so far as it is a mere piece of matter. It might be said that the total process going on in the brain at any one time has both its physico-chemical 'aspect' and its vital 'aspect', and that sense-data belong to the vital 'aspect': the total process, one would insist, includes both of them together, and cannot be fully understood either in physico-chemical or in vital (*inter alia* sensuous) terms. In so far as cerebral processes have this sensuous aspect, the brain, one would say, is also the *sensorium*: if so, the thesis is that it is the *sensorium* which is sonorous when we hear a bell, and red when we see a tomato. Or one might use the language of the Emergent Theory, and hold that sensuous qualities like red and loud emergently qualify certain physico-chemical processes in the brain when these reach a certain degree of complexity. (If so, the sensuous quality would qualify a certain set of processes as a whole, and not any one part-process taken singly.¹) These questions, however, belong to the Philosophy of Biology. All that concerns us is the suggestion that sense-data may very well inhere in the brain because it is a living organ, and that they are vital processes.

But there again is a special difficulty about expanded sense-data, which we must now consider. If visual and tactual sense-data inhere in the brain, shall we not have to say that the brain is in two places at once? ² It is certain that they are not spatially *inside* it. They always purport to be (and in some cases, as we shall see, they actually are) constituents of the surfaces of external, that is, extra-cerebral objects. And most of these objects are a long way away from our brains. No doubt if a living brain were cut open by a physiologist, he would be acquainted with certain colour-expanses, and some of these might be constituents of the surfaces of certain parts of that brain. But those colour-expanses would not be the ones which the owner of the brain was aware of, but would differ from them completely in shape, colour and position. We may add that if my sense-data were literally inside my brain (though undetectable to an outside observer) it would be impossible for them to manifest to me any material object; since they only do this,

¹ Perhaps, too, the set of processes must have a certain minimum duration in order to be sensuously qualified

² This problem is the one discussed by Physiologists under the name of the *projection of sensations*

as we shall contend later, by always purporting to be and in some cases actually being constituents of the surfaces of such objects.¹

Indeed, we should be even worse off than we are upon the doctrine of 'private spaces'. This, we have seen, maintains that visual and tactual sense-data are not in Physical Space at all, i.e. that they are neither near to nor far from nor coincident with the surfaces of the material things to which they belong, and that they are neither smaller nor larger than nor those surfaces, nor of the same size. But if sense-data are literally inside the brain we are committed to the conclusion that sense-data are always *smaller than* the things to which they belong (it ought to be possible to say how much smaller) and that our own head is very much larger than it appears from touch to be.

And other difficulties will arise, concerning the *situations* of sense-data. For instance, when I lay my finger on top of a large tin, it is natural to say that the pressure-expanse which I feel is wholly surrounded by the colour-expanse which I see. But there is no reason to think that the corresponding cerebral tracts (upon the chemical processes in which the occurrence of these two sense-data depends) are related in anything like this way. And if the sense-data can be projected into some other part of the brain, different from that in which the processes which generate them are taking place, why should they not be projected outside the brain altogether?

Again, when one walks round an object, and looks at it first from the North side, then from the West side, the second sense-datum seems to be in a place *very near* to the place where the first was. indeed, in favourable cases, they seem to be constituents of two actually *adjacent* sides of one solid. This nearness, or adjacency, is not of course sense-given, and only reveals itself on comparison of several sense-fields: yet it seems every bit as obvious as colour or shape. But if the two sense-data are inside the brain, they cannot really be thus related. For in walking from the North side of the object to the West side I have moved my brain through a long distance, and between the edge of sense-datum No. 1 and the edge of sense-datum No. 2 there is an interval perhaps of many yards. So also

¹ If they were literally inside the brain, we should have to fall back on the Causal Inference Theory to justify our beliefs about the material world (brains included), and, as we have seen in the last chapter, that theory is quite indefensible.

when two observers look at the same small object from opposite sides of the room. It is natural to suppose that the two sense-data are very close together. But if the sense-data are literally inside their brains, they must be at opposite sides of the room, as the two brains are. To say that visual and sense-data are in Physical Space and subject to this systematic illusion is even worse than saying that they are nowhere in Physical Space at all; for this at least leaves us free to say that they are intimately united to physical objects in some other way, whereas the intra-cerebral view by making the sense-data themselves physical surfaces in the brain sets up a gulf between them and the rest of the physical world.

In short, if sense-data are spatially inside the brain, we shall be quite unable to know that they are: for causal inference, which is all we have to fall back on to inform us of the existence and natures of material objects, will not enable us to know that we have a brain at all. But can they inhere in the brain and yet be spatially outside it? Or (what comes to the same thing) can it be that the brain grows larger when we see something, e.g. that it is both here in my head and out there on the surface of the distant mountain?

This difficulty may well seem fatal to the theory. We may however seek to diminish its force by the use of two distinctions. First let us remember that a visual or tactual sense-datum is not a surface (that is, a surfaced body), still less a solid, but only an *expanse*. Now an expanse, though it has size and spatial relations, cannot be said to *occupy* space. It takes up no room, and keeps nothing else out, and though it may happen to be a constituent of the surface of a material object, it cannot itself be called material; for it does not possess the causal characteristics which are proper to matter, for instance inertia or impenetrability. Further, as we have seen, both visual and tactual expanses exist only 'from a place', and this, though it is a way of *being in* space, is incompatible with the *occupation* of space. What occupies space exists 'from' no place, or, if you will, from all places. Thus if we say that the brain becomes expanded when a visual field comes into being, this does not mean that it is physically any larger than it was before. A man's head does not swell when the electric light is turned on; it takes up no more room than it did, and it impedes the movements of other bodies no more than it did. To think otherwise is to think of a visual sense-datum as a piece of matter, and of the visual field as a sort of thin physical skin,

which stretches and shrinks and assumes various shapes as the stimuli entering our sense-organs alter.¹

We must also remember the distinction between the material and the vital aspects of brain-processes. It is only in its vital aspect that the brain is *expanded* when a visual or tactual field comes into existence: in so far as it is a material object, i.e. an object *extended*, subject to physical and chemical changes and causing them in other things, it remains inside the head, and is no larger than it was before.

The conclusion is that if we are prepared to allow that the brain is not merely a piece of matter but has vital as well as physical capacities, or, if you will, that it is not merely the brain but also the sensorium, there is nothing *prima facie* absurd in the hypothesis that sense-data inhere in it, especially as they are in any case *vital* events. And this conclusion is strikingly parallel to the one which we reached concerning the previous suggestion. For there also we found that sense-data may very well be phases of the self (or soul) if the self is something more than the merely cognitive, affective and conative being that it is usually taken to be.

But if there is nothing inherently absurd in these two suggestions, what arguments are there for thinking that either of them is true? It seems to me that there is one argument, a negative one, and that it may be used equally in favour of both. It is as follows:

We are assuming for the moment that there is some substance of which sense-data are phases.² Let us call this substance X. Our problem may now be put in this form: what *other* characteristics does X possess besides its sense-given ones, e.g. colour, loudness? For instance, what characteristics does it have when I am asleep or otherwise unconscious? If it is a substance, it must have *some* other characteristics: for as we have seen, even if all the sense-data of all my senses are combined, they do not suffice by themselves to constitute a substance. Moreover, if it is a substance, it cannot be annihilated every time I become unconscious; some events must therefore be going on in it when I am not sensing.

The answer seems clear. Either we can attribute to X no

¹ Cf the discussion of the *Visual Sphere* theory, above, pp. 107-9.

² The theory that they are phases of nothing, i.e. that there is no substance in which they inhere, will be considered later Cf pp. 136 and following.

other characteristics at all : or we must attribute to it the characteristics of the brain or the characteristics of the self or of both ; that is, we must say that X is the brain or the self or both together. For what other candidate is there ? It is no good suggesting that X is a material thing other than the brain (that would be Naïve Realism again) ; nor that it is a compound or complex of objects including, for instance, the brain, the eye, the light rays, and the external object—for this hypothesis, we have seen,¹ will not do for the case of hallucination, in which only the self and the brain are present, and, besides, it seems to be in itself unintelligible.

The argument may be stated in another way. If X is something other than the brain and the self, the process by which sense-data are generated must be one of *transeunt causation*. The brain and the self must act upon X, and cause it to assume such qualities as redness and loudness. But the process cannot really be an instance of transeunt causation. For when one substance A acts upon another substance B, e.g. when fire causes wax to melt, the change in B is not *wholly* determined by A, but is partly due to B itself : for if we substitute C for B, the result is different—the fire melts the wax, but it does not melt the paper. But the sense-data, on the contrary, seem to depend wholly and in every detail upon the cerebral and mental processes going on at the time. If X is something other than the brain and the self, and is acted upon by them, at any rate it contributes nothing to the result ; still less does it 'hit back' and cause some change in the agents, as all other substances do when acted on. It seems to be a purely passive subject of qualities and processes. In itself and apart from the action of brain and mind upon it, it is, we must suppose, a pure potentiality like the *δύνη* of Aristotle, and relapses into that condition whenever their action is suspended. But a thing which has no causal characteristics of its own cannot really be acted on at all ; for there is nothing at all upon which the action could be directed. It is now obvious that the fiction cannot be kept up any longer. If X is supposed to be something other than the brain and the self, it turns out to be a mere *Unding*, in short, to be nothing at all. But if it be true (as we are assuming for the present) that sense-data must be phases of *some* substance, X certainly cannot be nothing at all, for sense-data certainly occur. It must then be identical with either the brain or the self or both ; and the permanent capacity of

¹ Chapter III, pp. 59-61.

which sense-data are the transient actualizations must be either cerebral or psychical or both at once.

But if X is either the self or the brain (sensorium), which of them is it? For sense-data depend upon both, and could not occur in the absence of either. The obvious reply is that in any case the self and the brain, or rather the self and the entire organism which it animates, together form a *substantial compound*, having certain characteristics ('emergent' characteristics if one will) which neither of them would possess if it existed alone¹; for instance, neither a disembodied soul nor an inanimate body could walk or talk or paint a picture or in general do any of the 'actions' which the compound can do. And it is in this substantial compound, not in the two parts of it, that the power of generating sense-data really inheres. It is admitted that many sense-data are influenced by our mental dispositions, viz. all those which are wholly or partly hallucinatory²; if form-quality is always partly perceptual in character (as was suggested on p. 114 above), then all without exception are so influenced. Now we can hardly suppose that first the brain generates a manifold of colour-expanses or sounds or pressures, and then the self, by a separate act, imposes further qualities upon this. On the other hand, if it is the self that generates the sense-data, then (by our argument) it must be the compound that they inhere in. The conclusion then would have to be that sense-data are neither purely psychical nor cerebral, but psycho-cerebral.

This conclusion, if we accepted it, would not oblige us to give up but would rather lead us to retain the view that sense-data are vital. For it is precisely the *living* man who is both bodily and animate at once. And bearing in mind the teleological character of sense-data, that is their function in making perceptual consciousness possible, we might say that sense-data are those vital processes in which, on the reception of external stimuli, the animate organism displays external qualities. This does not, of course, mean that there are *no* qualities at all which could be attributed to the brain alone or to the mind alone, or that there are *no* purely mental or purely cerebral events, e.g. acts of mathematical thinking, chemical changes. It only means that there are *some* events and *some* qualities which belong to neither party singly, but only to the compound. So also not all the qualities of an organism are 'organic', e.g. its mass is not, but some are.

¹ Partial hallucination is, of course, quite common.

objects to itself, or makes them manifest to itself. We might even appropriate to our use the adverbial language of the Feeling Theory. This would enable us to say, if we liked, that a visual sense-datum is the animate organism displaying material objects to itself colouredly and expandedly ; and that a smell, so far from being merely the stinking state of my own nervous system, is myself making objects manifest to myself in an odorous manner.

So much by way of exposition of the theory. Let us now consider whether it ought to be accepted. We may fairly admit that *if* sense-data are phases of any substance, then it is the brain and the self taken together, the psycho-cerebral compound, that they are phases of. Yet there are grave objections to the theory, which all perhaps reduce to the fact that in various ways the relation of sense-data to events which admittedly inhere in the brain and the self is not at all the same as the relation of those events to one another.

First, in a spatial way : of the events which are ordinarily admitted to inhere in the brain and the self those that are spatial at all (which acts of thinking, for instance, are not), all take place within a strictly limited volume inside the skull. But as we have seen, the theory forces us to say that the psycho-cerebral compound is in a sense in two places at once ; for events a long distance from the skull, namely, certain sense-data of sight and touch,¹ will also inhere in the compound. And when all is said about the difference between 'occupying a place (as physical events do) and merely 'being at' a place (as sense-data are), this remains difficult. For in the case of sight at least there is no spatial *continuity* between these colour-expanes and the chemical and other events going on inside the skull. The two sets of events are separated by a blank interval of 'outness' (as indeed the very nature of sight requires) ; and further, this interval is physically occupied by particles of air and radiations of various kinds, which constitute a kind of barrier of irrelevant matter between the two. But according to our ordinary notions of substance, all the events which belong to the same substance ought to be spatially continuous, if spatially characterized at all.

Secondly, there is complete discontinuity in respect of quality. A colour-expanse is quite unlike a chemical change ; and it is

¹ Namely, those 'normal' ones which (in a way yet to be determined) are constituents of the surfaces of extra-cerebral objects.

not even conceivable that this gap could be filled by any kind of intermediaries, even if we were allowed to postulate extra events *ad libitum* for this purpose. A colour-expanse, too, is completely unlike a sound, a sound is utterly unlike a smell, and it does not seem even conceivable that these gaps should be filled either. We get the same result if we compare the qualities of sense-data with psychical qualities: between redness or loudness on the one side, and surprise or anger or attentiveness on the other, there is a gulf, and no transition seems possible from the one set of qualities to the other. But now we commonly think that the events which belong to the same substance should be qualitatively continuous.

Thirdly, in respect of sequence: if we consider any ordinary substance we find that the earlier phases of it condition the later phases; they are not indeed the *sufficient* conditions of the later phases (unless the substance is entirely free from interference from without, which never actually happens), but still they are *necessary* conditions of these. The immanent-causal¹ law which is exemplified in this conditioning is what we call the 'nature' of the substance in question. And in the case of an ordinary compound substance, for instance an organism, we find that there is this relation not merely between the several events which inhere in the compound as such, but between them and the events inhering in the constituent substances which make it up: e.g. not merely between the several organic events in the organism (say assimilation of food and growth), but between organic events and certain purely physical and chemical events taking place in its minute parts. But now the sense-datum which I sense at a certain moment does not seem to be in this way a necessary condition of later events in my self or in my brain. It is true that a physiologist or alienist is often able to infer from a report about a man's sense-data what events will occur in that man's brain in the future; and we can all infer from the presence of the sound of a motor-horn in a man's auditory field that he is likely to step out of the way. But both these inferences seem to be *indirect*. One cannot infer straight from the sense-datum to the future cerebral or psychical event. The physiologist must first infer

¹ The contrast between immanent and transeunt causation is not perhaps very happily expressed: but the phrases are current, and are not likely to mislead. It might perhaps be better to speak of immanent and transeunt *determination* and to use the term causation (without any adjective as equivalent to the second.

from the sense-datum to the present or just-past psycho-cerebral event, upon which it depends, and from that to the future cerebral event. And in the other case it is not from the mere occurrence of the sense-datum, but from the sensing of it, that we infer the man's movement. (This indirectness of relation would sometimes be expressed by saying that sense-data are *epiphenomenal* events. But this expression is apt to mislead, for it suggests that sense-data *in no way* determine subsequent events, which is very far from being the case. For if they did not exist there could be no sensing of them, and it is plain that sensing plays a most important part in determining the behaviour of sentient beings, which in turn affects the rest of the material world in various ways.)

On these grounds it seems difficult to maintain that sense-data actually *are* psycho-cerebral events. For they do not have the requisite sort of relations with other admittedly psycho-cerebral events, nor yet with purely psychical and purely cerebral events.

Thus we seem driven to the conclusion that sense-data are not phases of any substance at all. 'But can there really be events which happen to nothing, and just occur in the void?' It is important to realize that these are two different questions, not just two ways of putting the same one. I see no reason why there should not be events which 'happen to nothing' if this phrase is taken quite literally, to mean 'events which are not united with other events *in the way that the diverse phases of the same substance are united*', viz. by continuity in respect of place, time, and quality, and by immanent causation. On the other hand, it seems probable that there are no events which 'occur in the void' in the sense of being *in no way united* with events which *are* phases of some substance. It is quite certain that sense-data at any rate do not occur in the void.¹ For they are intimately united with the psycho-cerebral events upon which they are wholly dependent for their origin, for their persistence and for all their qualities. We might express the situation metaphorically by saying that they are 'prolongations' of those phases of the psycho-cerebral compound; we may add that they are intimately related to it in a teleological way, since without sense-data the animate organism would not only lack perceptual consciousness but also would be incapable of directing its own behaviour or indeed of surviving at all.

¹ Cf. C. D. Broad, *Scientific Thought*.

Thus there is no question about the closeness of the relation between sense-data and the psycho-cerebral compound. Only it does not happen to be the same sort of relation as that which subsists between two phases of one substance.

Secondly, no sense-datum is sensibly isolated. Every sense-datum is part of a sense-field, and sense-fields occur in series (called by Dr. Broad *Sense-histories*).

Thirdly, and most important, all sense-data which are not hallucinatory are united also with external objects, both by the relation of indirect causal dependence and (what is still more fundamental) by the relation of belonging to, which we have still to elucidate. And, lastly, it is clear that all the sense-data which belong to the same thing, even those which are sensed by different minds, are somehow united with one another.

It looks as if a sense-datum is only not an event inhering in any one thing, because it is so intimately related to several different things at once : on the one hand, to the thing to which it 'belongs' and which it enables us to be perceptually conscious of ; on the other, to the brain and the mind of the sentient. Thus the colour-expanse with which I am acquainted when the tree is present to my senses is a member of at least two distinct complexes. One consists of a certain animate organism together with all the sense-data which are at that moment 'prolongations' of it. The other consists of the tree together with all the sense-data which at that moment belong to it. And neither complex is a wholly external one. An animate organism which did in those circumstances generate this sense-datum would not be in a 'normal' or 'healthy' condition ; and a mind which did not sense *some* sense-data would lack materials to think about, and objects to direct its emotions upon. On the other hand, it seems likely that the being that to which such and such a group of sense-data belongs is an essential part of the nature of the tree ; for probably material thinghood in general cannot be defined without reference to sense-data, and a particular material thing probably cannot be described without reference to a particular group of sense-data.

This indeed is the truth which is exaggerated, no doubt grossly enough, by the theory known as Neutral Monism, which maintains that sense-data are the constituents both of the psychical and the physical worlds, mind and matter being names for the two main ways in which this *neutral stuff* simultaneously arranges itself ; and that the nervous system (itself

composed of sense-data) is the agency which by responding selectively to some neutral particulars and not others, picks them out of the whole and enables them to add themselves on to the series which collectively is a certain mind. Now it does seem to be true that sense-data are intimately related, and in more than one way, both to minds and to external, that is extra-cerebral objects ; and that without reference to sense-data the nature of neither can be fully understood, nor perhaps that of brains either. Only the conclusion drawn by Neutral Monism, that both minds and matter *consist* of sense-data, does not follow from this, and does not, in fact, seem to be true. There are other relations besides that of ' being a constituent of '.

CHAPTER VI

PERCEPTUAL CONSCIOUSNESS. I PERCEPTUAL ACCEPTANCE

WE have seen that perceptual consciousness neither is nor is derived from an inference from effect to cause, and further, that it cannot be justified by any such inference. We must now attempt to give a more adequate account of it. We shall begin with a single act of perceptual consciousness taken in isolation. When we have several such acts suitably related, new forms of perceptual consciousness arise, which we must consider later: at present it is the simplest and primary form which concerns us. Suppose, then, that I see a tree, in that sense of the word in which 'to see' stands for a specific form of consciousness, distinct from but accompanying sensing, and does not merely convey that the tree is present to my senses, i.e. that I am sensing a sense-datum which does in fact belong to the tree.

Now in the first place it is clear that this perceptual consciousness is not a form of *knowing*. It is neither 'knowledge by acquaintance' (as sensing is) nor is it 'knowledge of facts about'. For it may be mistaken. It may be that the thing is not a tree but something else. It may be not over there but somewhere else (I may have been deceived by a mirror image); it may not have the size or the shape I take it to have. Or perhaps I am even having a complete hallucination and there is no material object present to my senses at all.

Accordingly certain philosophers, notably Reid, have described perceptual consciousness as *belief*; and this seems a plausible suggestion. But unfortunately we here encounter a difficulty of terminology, since the word is sometimes used in a very wide sense and sometimes in a narrow one. It seems best to follow Cook Wilson in restricting the expression 'to believe that S is P' to that state of mind in which, being aware of certain facts, (1) we know that they are evidence for S's being P, (2) we know that they do *not* make it certain that S is P, (3) we have towards the problematic conception S-P

a feeling of confidence capable of varying in strength.¹ Now if this be so, belief includes or at any rate is conditioned by a form of *inference*; for the apprehension that a set of premises ABC are evidence for (or make probable) a particular conclusion is no less to be called inference than the apprehension that a certain other set, say ABCDE, necessitate that conclusion. But as we have seen, the Causal Theory was obliged to admit that in perceptual consciousness as we have it now (whatever it may have been in our infancy) there is no trace of inference, though according to that theory only inference could justify it.

Further, it follows from this account of belief, that we cannot strictly be said to believe without evidence²: what is so described is not belief but something else. Moreover, since *ex hypothesi* we know that the evidence does not amount to proof, we cannot believe that S is P, without knowing that, after all, S may not be P. Belief even at its firmest is never wholly undoubting; we are still aware that, after all, we may be wrong. Or, if we cease to be aware of that, we have slipped out of belief into another state of mind.

Now perceptual consciousness is not like this. Let us grant for argument's sake that the existence of a sense-datum of such and such a sort, taken along with some further facts already known, does in fact make it probable (if not on causal grounds, then on some others) that there now exists a tree having such and such characteristics. Nevertheless, in my act of perceptual consciousness I am not *apprehending* that this conclusion is made probable: the notion of probability does not enter my head at all. There may be facts about my sense-datum which could be used by an external philosopher as evidence for the existence of the tree if he knew them. But I, the subject of the perceptual act, do not use them so. I am in a state of mind which is, so to speak, below the level of evidence-using.

This state of mind much more resembles what Cook Wilson calls *being under an impression that* than what he calls belief. In 'being under an impression' we simply jump straight from

¹ Cf. *Statement and Inference*, Part II, ch. 3. On 'problematic conceptions', cf. the same work, Part III, ch. 5

² Still less can we believe contrary to the evidence. The schoolboy who defined faith as 'believing what you know ain't true' was guilty of a contradiction; and would still have been so, even if he had said only 'believing what you know to be improbable'.

the awareness of A to the thought of B, without any preliminary wondering or considering of evidence, indeed without any rational process whatever ; for instance, we jump from hearing a knock on the door to the thought that our friend Jones has arrived.¹ And as there has been no consideration of evidence, so there is no consciousness that we may be wrong : one just has not raised the question whether one is liable to be wrong or not. We may also appeal once again to the time-honoured analogy of reading print. The reader does not say to himself 'These words here are evidence that Cæsar crossed the Rubicon : so on the whole I believe that he actually did'. One simply passes straight from the written symbols to the propositions which they signify. Only in our case there is not even a passage. The two states of mind, the acquaintance with the sense-datum and the perceptual consciousness of the tree, just arise together. The sense-datum is presented to us, and the tree dawns on us, all in one moment. The two modes of 'presence to the mind', utterly different though they are, can only be distinguished by subsequent analysis.

Agreeably with this, there is in an act of perceptual consciousness no element of doubt, no awareness of insufficiency or inconclusiveness, as there is in belief proper ; and in this again it resembles both reading and 'being under an impression that'. True, it may have to be revised later, as when we correct an illusion or hallucination. We may say that *in fact* it is always provisional and liable to correction. But this provisionality is not present to the mind of the conscious subject himself : not because he has asked himself 'Am I liable to be mistaken about this ?' and decided that he is not, but because he simply has not raised the question at all. When he does raise the question and asks himself 'But is this really a tree ?', at once he slips out of the perceptual consciousness of the tree, not indeed into mere sensing, but into a less determinate consciousness whose object is 'a material thing of some kind or other'. And so long as he retains this doubt, it is possible for him to believe that on the whole the thing is a tree after all, but it is not possible

¹ This is vulgarly called 'jumping to conclusions' : which of course may happen to be true ones, and indeed are likely to be true more often than not, since our associative dispositions (to which such jumps are due) have been acquired through experience of often-repeated and therefore probably regular conjunctions.

for him to *see* it as a tree ; on the other hand, he cannot hold this belief unless he still sees it as some body or other.

Accordingly it would be nearer the mark to describe perceptual consciousness (in this its simplest and primary form) not as belief, but as *absence of disbelief*¹ : or again as 'the not doubting that'. Perhaps, however, the best term is *acceptance* or *taking for granted*. And we shall in future call this primary form of perceptual consciousness *perceptual acceptance*.

What then is it that is taken for granted? That there exists a material thing : and not merely that there exists some material thing or other somewhere or other, but a material thing such that this sense-datum which I now sense belongs to it.² Nor is this definite enough. The material thing, whose existence we take for granted, is still further specified as having a *front surface* of a certain sort, where 'front' means nearer than its other surfaces to the point of view at which the perceptually-conscious subject is.³ (What the thing's back surface or sides or insides may be is not as yet specified. In the primary perceptual act we only take for granted that it has some sort of back surface or other ; what sort, we leave it to subsequent acts to determine.)

But in what way exactly is the front surface thus specified? What nature it is taken to have obviously depends partly upon the nature of the present sense-datum ; but partly also on our acquired dispositions. Thus if the thing is very familiar to us, we still attribute to it a front surface of a highly determinate kind even when the sense-datum is excessively faint and undifferentiated : as when I recognize a familiar house at a good distance off, or in a mist. Here, however, we shall neglect this effect of acquired dispositions in order to study the perceptual consciousness as far as possible in its most elementary form. And it is in any case necessary to go back to this form of it, if we can. For everything was once unfamiliar to us, and the acquired dispositions which we have now were only built up by the repetition of acts of a more elementary type in which no acquired dispositions were present. Thus in any case we come back in the end to the specification of the front surface by the sense-datum alone.

¹ Cf. the description of the attitude of the reader of poetry or fiction as 'a willing suspension of disbelief'. Only in our case the suspension is neither willing nor unwilling ; it is just automatic.

² Thus to perceive in Reid's sense is to take for granted that you are perceiving in Professor Moore's sense. Cf. above, pp. 22-25.

³ On 'point of view' and its tactual *analogon*, see below, Ch. VIII.

But in what manner the sense-datum specifies the front surface it is not easy to be sure. On the one hand we might be tempted to say that we take the sense-datum to *be* the front surface of the material thing,¹ or to be *coincident* therewith: (so that Naïve Realism would be perfectly right, provided we substituted 'taking for granted' for 'knowing'). This is plausible for touch and for vision at a fairly short range: thus it is plausible to say that I take the brown sense-datum which I sense at this moment to *be* the surface of the table at which I am writing. But when we turn to long-range vision we get into difficulty. Thus when two men are present to my senses, one five feet off and one a hundred yards off, I do not take for granted that the distant one is smaller than the other, or that he has a flat face; yet there can be no doubt that the sense-datum belonging to him is sensibly smaller than that belonging to the other man, and that it is flat.

Further, as Professor G. E. Moore has pointed out, the ordinary percipient when he sees something cannot be said to take for granted that his sense-datum is 'in Physical Space', as it would have to be if it were, or were *coincident* with, the surface of a material thing: nor yet that it is not in Physical Space. At the level of perceptual consciousness the question simply is not raised. The truth is, I think, that perceptual consciousness (in this respect as in others) is, so to speak, more negative than positive. It is rather that we do not assert a difference between the sense-datum and the surface, than that we do assert their identity.

Now of course we may ask, what is *in fact* the spatial relation between the sense-datum and the surface of the material thing? ² And it is a plausible answer that one single sense-datum taken alone cannot be said to stand in any spatial relation with any material thing, i.e. to be anywhere in 'Physical Space' at all: what has position in Physical Space being a certain sort of *group* of sense-data taken collectively. Now this might lead us into a second temptation. We might be tempted to say: what we take for granted in perceptual consciousness is that this present sense-datum is a member of a group which taken as a whole is, or is coincident with, the front surface of a material thing. But this, too, we must resist, for it is an 'over-rationalization' of the perceptual

¹ Or as Professor H. A. Prichard has expressed it, 'We straight off mistake a colour for a body' (where 'colour' means 'colour-expanse').

² The question is discussed at length below.

state of mind ; we should be making the plain man, or indeed the plain animal, into a philosopher. If there really is the material thing, and if it really has the surface which the perceptual subject takes it to have (and of course the act of perceptual acceptance is always liable to be erroneous), then the sense-datum really was a member of such a group. But it does not follow that the conscious subject himself either takes it to be a member of such a group, or takes it not to be : the question whether it is or isn't simply has not occurred to him.

The most we can say is this : in perceptual consciousness, we do not regard the single sense-datum as *completely* specifying the shape, size and situation of the front surface of the material thing which we are taking to exist. We regard it as *restricting the possibilities* to a greater or less extent ; we leave the complete specification of them to subsequent sense-data. Thus if the present sense-datum is triangular I take it that the thing's front surface is not circular or square,¹ but I am by no means sure that it has not wavy edges, rounded corners, and a different relation of height to base. The degree in which the sense-datum is taken to restrict the possibilities depends mainly on two factors : its degree of differentiation, and in the case of sight its 'stereoscopic' character. When the sense-datum is flat, and uniform in colour and outline, we only make a 'rough shot' at the shape of the thing's front surface : we take it to be 'fairly large', 'more or less round' or 'broader than it is high'. When the sense-datum is full of detail and completely stereoscopic, we are very much more definite in our taking (though of course the resources of language may fail us if we attempt to state it in words), e.g. we take the front surface to be about seven feet by three, approximately rectangular in shape, and divided into panels. But the back and side surfaces, though we take for granted that there are some, still remain unspecified ; we assume, too, that even the front surface could still be specified more, if we looked closer or used a magnifying glass, though only in relatively minor respects. Here we are less inclined to admit a non-identity of the sense-datum and the thing's surface, if we are asked. But still it would be false to say that we do positively take them to be identical.

¹ Of course I might be wrong even in this, owing to some complicated optical conditions. But we are here discussing what I *take* to be the case, not what *is* the case. Nor are we yet asking how we know whether it *is* the case or not. That question is discussed in the next chapter.

To sum up this part of our discussion: What the perceptually conscious subject takes for granted when he senses a particular visual or tactual sense-datum is that there now exists a material thing to which this sense-datum belongs; and that this thing has a front surface of a certain general character, to be more exactly determined by subsequent perceptual acts. What general character the surface is taken to have, and how determinate that character is, does depend upon the nature of the present sense-datum. But it is not true that he takes the sense-datum to be identical with the surface, though (his state being an unreflective one) he does fail to distinguish them.

Next, we must be quite clear, that the material thing whose existence we take for granted differs radically from any datum that we sense. All that they have in common is that both are particulars. That is, what we *mean* by the term 'a material thing' is quite different from what we *mean* by 'a sense-datum', whether there are actually any instances of material thinghood or not.

In the first place, a sense-datum is something *transitory*: it endures only for a few moments. But by a material thing we mean something which *persists* for a long period, both before the sense-datum existed and after it has existed.

Secondly, a sense-datum is *spatially incomplete*, having no back, top, bottom or insides. Its goods, so to speak, are entirely in the shop-window. Hence it has been said to exist only from a place. By a material thing, on the other hand, we mean something *spatially complete*, a three-dimensional whole, with back, top and bottom as well as front, and having an inside as well as an outside - something which does not exist from any special place.

Thirdly, a sense-datum, being somato-centric, is *private* to the mind which senses it. But a material thing is conceived to be *public*, accessible to an indefinitely large number of minds.

Fourthly, there are *many kinds* of sense-data, e.g. colour-expanes, sounds, pressures, and these kinds are mutually exclusive. But the *same* material thing has sense-data of several different kinds 'belonging to' it, usually of all the different kinds. It can be present to our senses in many different ways, and we can have perceptual consciousness of it in many different ways. (This characteristic is called by Dr. Broad 'neutrality'.)

Lastly, sense-data have no *causal* characteristics. They do indeed make a difference to the world ; for if minds were not aware of them, minds could not voluntarily originate changes in matter ; to be aware of something is, however, not the same as to be changed by that something, and consequently the relation between sense-data and the awareness of sense-data cannot be a causal relation. But by a material thing we *mean* something which has causal characteristics : and the different kinds of material things (as diamonds, cats, hydrochloric acid) are classified by their different causal characteristics—the power of cutting glass, or catching mice, or dissolving chalk. The most fundamental of these causal characteristics is ‘impenetrability’, i.e. the power of keeping other things out of the space one is in. This no sense-datum displays.

Thus even if visual and tactual sense-data had been ‘physical’ in the sense of being parts of the surfaces of material things, as Naïve Realism maintained, we still could not have said that they *were* material things : still less could the other kinds of sense-data have been so. At most they would only have been *constituents* of material things. And even if a material object had been nothing but a collection of sense-data, as the Selective Theory and some forms of Idealism think, still the collection as a whole would have had many characteristics which no single member of it has in isolation : so that even on that theory there would be a fundamental difference between a sense-datum and a material thing ; the distinctive properties of matter would have been ‘emergent’ characteristics characterizing the group as a whole, but not the individual members of it taken separately.

Thus not only is perceptual consciousness a radically different form of consciousness from the sensing which it accompanies, being a form of taking-for-granted, whereas that is a form of knowing : what we are conscious of is also radically different. And this is a point on which all theories of Perception are really agreed, whatever terms they use, and however much they may diverge in other ways, though it has not always been clearly stated.¹

Now it does not follow from anything we have said, nor is it in fact true, that the material thing which we take to exist necessarily does exist. So far as we have yet shown, it may

¹ The point was clearly seen, and clearly stated, by Hume, Reid and Kant : by other philosophers both before and since, not so clearly.

never in any instance exist, and perceptual consciousness may be nothing but an inevitable and continuing error.¹ Nor need the material thing have the kind of front surface which we take it to have. When we sense a sense-datum *s* and take for granted the existence of a material thing *M*, it is quite certain that the sense-datum exists at that moment, however short-lived it may be. But as yet, and so far as this single perceptual act goes, it is not in the least certain that there is any such thing as *M* at all. I may be having an hallucination. Or if there is such a material thing, it may not have exactly the sort of front surface that I take it to have; its shape, size, or situation may be other than I take them to be: I may be having an illusion. (Or equally I may be having neither.)

Thus although we cannot sense what is not there at the moment of sensing, we can be perceptually conscious of what is not there. (It must be remembered of course that we are only speaking of the single act of perceptual consciousness; when we have a series of such acts, other considerations arise.) This only sounds paradoxical so long as we confound the two forms of consciousness, or again because we confound perceptual consciousness with the having a material thing present to one's senses: which we the more readily do, because words like 'see', 'hear', 'feel',² 'smell', and even the word 'perceive', are commonly used for all these.

Let us consider once more the celebrated case of the delirious man who 'sees a pink rat'. The correct analysis seems to be this: (1) He is acquainted with a pink sense-datum; and about the existence of this ('wild' though it is) there is no doubt whatever. It may be a poor and fleeting entity, but still it is a real one. (2) He takes for granted the existence of a rat, and he takes for granted that this rat has a front surface of a certain general sort—what sort, and how specifically conceived by him, depends upon the particular nature of the sense-datum and of his acquired mental dispositions. This rat is not real. Still, he really does have perceptual consciousness of it, in exactly that sense in which he has a simultaneous perceptual consciousness of his table or his boot. Thus three things are indubitably real: the sensing, the

¹ As Hume appears to think.

² As when we say in the dark, 'I can feel a keyhole here'. The verb 'to touch' does not show this ambiguity. To touch *A* means 'to have *A* present to one's senses by means of a tactual datum'.

sense-datum, and the act of perceptual consciousness. Only one thing is not real—the material thing which is the object¹ of his perceptual consciousness.

We may notice another and less-discussed instance, the blue sky.² When I look upwards on a cloudless day, I *sense* a blue expanse which certainly exists; but what I am perceptually conscious of is a vast and more or less bowl-shaped thing, the 'vault of Heaven', and this is what I call the sky. Plainly I do not mean by 'the sky' that huge mass of air particles, which (as we believe) is in fact the sense-datum's differential condition. Perhaps it is air that I *ought* to be conscious of, but as a matter of fact I am not; and moreover, people had perceptual consciousness of the blue sky long before they knew that air existed at such an altitude, or indeed before they knew that it existed at all. On the other hand, I do not mean by 'the blue sky' simply the blue sense-datum; for I mean something which persists whether I am sensing or not, and something public to an indefinite multitude of observers. That is what I *mean* and what I am perceptually conscious of: but in point of fact no such bowl exists. What exist are the various blue sense-data sensed by various observers, and the several perceptual acts of the observers.

We may sum up the situation by saying that the object of any one act of perceptual consciousness is as such *ostensible* only, and has, as it were, a *prima facie* character. It 'claims' to be real and to have certain characteristics, and it may in the end turn out to have them; but equally it may not. Yet in spite of this it is no mere arbitrary fancy: it is forced upon me by the character of the sense-datum which I am sensing, and no other ostensible but precisely this one could ostend itself to me here and now, the sense-datum being what it is.³

It follows from this that any single perceptual act is as

¹ I here mean by 'object' only 'object-of', i.e. that which is before the mind in a particular sort of consciousness. There is no reason why this should not be unreal—unless 'consciousness' be equated with 'knowing', which seems an unfortunate use of language. So also we speak of the object of hope or of desire, plainly, only that which is not real can be desired or hoped for.

² Something has already been said about this in Chapter V, p. 108, above.

³ Perhaps we may compare these ostensibles which are the objects of the primary type of perceptual consciousness with the *prima facie* duties which Dr. W. D. Ross holds to be the objects of the primary type of moral consciousness. Cf. *The Right and the Good*, ch. 2.

such provisional and requires confirmation by subsequent acts. In this it is quite unlike sensing ; which being a form of intuitive awareness, we could not even wish that it should be confirmed, for the very idea of confirmation is in its case absurd.

There is another difference between the two forms of consciousness, connected—as we shall see—with this last one. Perceptual consciousness admits of *degrees of definiteness* (and indefiniteness). But sensing cannot be called either definite or indefinite. It exists in full perfection or not at all ; it is an immediate ‘confrontation’ of mind and sense-data, and admits of no degrees. This is not because it is a form of knowing or apprehending. For that *can* be indefinite : thus we often know that A is larger than B without being able to say how much larger. Sensing admits of no degrees of definiteness because it is a *non-attributive* form of consciousness. Where a characteristic is attributed to something (or discerned in it), the attribution may be more or less definite ; i.e. the characteristic attributed may be more specific, or less. But where there is no attribution but simply confrontation, there is no room for indefiniteness.

But perceptual consciousness may have all degrees of definiteness, ranging in the case of a single perceptual act from the mere consciousness of some material thing or other I can’t say what, which is the lower limit, to the consciousness (for instance) of a rectangular thing seven feet by three with dark spots on it. And if we bring in acquired perceptual dispositions, still greater definiteness is possible. For these enable us in suitable cases to take for granted not merely the existence of a thing having such and such a specific sort of front surface, but such and such a specific sort of thing behaving in such and such a specific sort of way ; for instance, of a short-eared owl flying at just above stalling-point : all this and more may be taken for granted in one single perceptual act. Nor is there any upper limit of definiteness ; on the one hand there might be a more differentiated sense-datum than this one, on the other our perceptual dispositions (our ‘powers of observation’¹ as we call them) might become more delicate than they are.

The sense-datum, on the other hand, no more admits of degrees of definiteness than the sensing does. The notions of definite and indefinite do not apply to it at all. It is a particular existent having a perfectly specific nature (whether

¹ That is really, of perceptual recognition.

describable by us or not). It is of just exactly this shade of colour and has just this shape and no other. There is, however, some danger of confusion about this. For sense-data are sometimes said to be 'dim' or 'vague'. Thus a landscape or view is said to be 'dim', and novelists and other picturesque writers are too fond of speaking of 'dim forms' and 'vague shapes'. But these adjectives properly belong not to the sense-datum, but to the perceptual act which it makes possible, and from which it derives its practical importance. A so-called vague sense-datum is really one which permits only of a vague or indefinite perceptual act: e.g. it enables us to take for granted the existence of some large body or other, but we cannot tell whether the thing is a horse or a haystack. Thus it is the perceptual act which is vague, not the sense-datum; the sense-datum is not vague but *ineffective*.

There are, however, certain characteristics which sense-data do have, and which because this ineffectiveness results from them are sometimes miscalled vagueness. Thus a sense-datum may be of *faint intensity*, very *uniform* in all its parts, and only *slightly different* from neighbouring sense-data. And these characteristics do vary in degree from one sense-datum to another. But the intensity of the sense-datum is always a perfectly determinate degree, be it great or small, and the same is true of the other characteristics. Thus terms like 'vague', 'definite' and 'indefinite' can only be applied to our cognitive acts, and (as we have seen) not to all of them, for instance, not to sensing.

We must now notice another characteristic of the perceptual act, very surprising and difficult to reconcile with those already mentioned: this we may call its *pseudo-intuitive* character. In respect of this, if it does not resemble, at any rate it simulates sensing itself. This character is particularly difficult to describe, but I hope I may at any rate make clear what I am referring to, however lacking in delicacy my analysis may be.

'Intuitive' is opposed to 'discursive'. The difference between them is not that intuition is direct or immediate and *discursus* mediate or indirect; or at least this is a confusing way of stating it. If I am in any way whatever conscious of something A, it is A itself that I am conscious of, and not a medium between myself and A. The difference seems rather to be as follows: In discursive consciousness (as the name

suggests) there is a *passage of the mind* from one item to another related item, for instance, from a subject to a concept under which we classify it, or from premises to conclusion. There may also be that kind of passage which is characteristic of 'wondering', when after developing the consequences of one alternative we pass to another alternative, and then to its consequences, and then to a third. And when we have discursive consciousness of a whole or complex of any sort (as in counting), although the whole may be vaguely present¹ to the mind from the first, yet definite consciousness of the whole comes *after* consciousness of the parts. In intuitive consciousness, on the other hand, consciousness of the whole comes *before* definite consciousness of the parts. And there is no passage of the mind: whatever we intuit is present all at once. We might say that intuitive consciousness is 'totalistic', not 'progressive' or 'additive'.

There is a further difference. In the discursive form of consciousness we seem to be active to be, as it were, 'seeking' or 'following' something. But in the intuitive form, though there is an act of consciousness—in the sense of an *actus*, the actualizing of a power at a certain moment,—yet there is no *activity*. The mind rests, as it were, on its object. (Not that it is passive either: it is just non-active.)

It is clear that the sensing of a sense-datum or again of a sense-field, e.g. a field of view, is intuitive in this sense.

But now the curious thing is that perceptual consciousness also *seems* intuitive. In the first place, not only is there no passage of the mind from the sense-datum to the taken-for-granted, both coming before the mind at once as one single complex: but also, within the taking for granted itself there is no passage from the front surface of the material thing to the back and sides and inside. Only the front surface is specified for us by the sense-datum, and indeed at the best² this is all that my sense-datum can actually be a constituent of; it cannot possibly be a constituent of the back or inside surfaces. Yet somehow it is the *whole* thing, and not just a jejune extract from it, which is before the mind from the first. From the first, it is the complete material thing, with back, sides

¹ Present to the mind in the sense that we ask ourselves the *question*, 'What sort of whole is this?'

² I say 'at the best' because we might be having an illusion or an hallucination. But even if we are, the perceptual act still has this totalistic character.

and insides as well as front, that we 'accept', that 'ostends itself' to us, and nothing less : a thing, too, persisting through time both before and after (whereas the most that could be present to our senses here and now is one brief phase of its history) and possessed of various causal characteristics. It is true that these further elements in the being of the ostensible thing are not so determinately specified as the front surface—that is left to further sense-data and further perceptual acts. Still already in this single act, even in a momentary glance, we do take them to be there, all of them ; as Mr. Joseph has said in another connexion, we must not suppose that because there is only a little definite before the mind, therefore there is only a definite little.¹

Thus when I look at a house, my sense-datum is in actual fact a constituent of the front wall at most (not of the back or inside walls or roof), and only of the front surface of that. But is it only this front surface that I am perceptually conscious of? Not at all. What is before my mind is a *house*, with four outside walls and many inside ones : all this and nothing less is what I take to exist. And not only so : what I take to exist is often not just a house but a particular house, with such and such a particular sort of back (though it is only the front part that is present to my senses) and such and such a set of rooms, thus and thus situated. Of course it need not in fact be that particular house, say Mr. Jones's ; it may not be a house at all—I may be having an hallucination. Still I do *see it as* Mr. Jones's house.

So also when I feel a door-knob in the dark, what I am perceptually conscious of is not just a surface, nor is it even just a door-knob. What is before my mind, what I 'accept' the existence of, is a whole door—and often it is a particular door, say the door of my room.

In short, even in the single perceptual act the material thing is 'presented bodily', *leibhaft gegeben*.² And so far the perceptual act does resemble an act of intuitive consciousness : it has the same 'totalistic' character.

And there is a second way in which the perceptual consciousness resembles or rather simulates intuitive consciousness : the perceptual act, though it is an *actus*, is not an *activity*. It is not a 'doing' (though of course it may and usually does

¹ H. W. B. Joseph, *An Introduction to Logic*, ed 2, p. 140. Mr. Joseph is discussing Denotation and Connotation

² The phrase is Professor Edmund Husserl's.

accompany 'doings' of a practical kind). There is in it no element of fussiness, no wondering nor questioning. One does not have to take trouble over it—it is a blessed relief from the labour of discursive thought. The only effort required (and of course it may be very great) is that of getting ourselves into the right bodily or mental state, as when we buy a pair of spectacles, or climb a mountain to see what is on the other side, or try to get into the situation when we can repeat an interesting hallucination; but once we have got into the right state of body or mind there is no more to do. The Thing (be it real or unreal) just comes, along with the sense-datum: it just dawns upon us, of itself. We look, and there it is.

Thirdly, the perceptual act resembles an act of intuitive consciousness in another and perhaps even more striking way: there is in it no element of questioning nor of doubting. It is an unquestioning acceptance. We might almost *define* it as the state of mind in which, when a visual or tactual sense-datum is sensed, we do not doubt that a material thing exists whose front surface this sense-datum specifies.

To sum up: in the act of perceptual acceptance, what we accept is not simply a surface (though this is the most that can be present to our senses) but a complete material thing as a whole. The act itself is not an activity, but is effortless and it is undoubting and unquestioning. Since it has these characteristics, it resembles an act of intuitive consciousness.

There are, however, two schools of philosophers who deny that it has them, and therefore deny the resemblance. These are the Rationalistic Idealists on the one hand, and the Associationists on the other.

The Rationalistic Idealists say that 'perception is full of the work of thought'. This seems to mean that the back surface and the insides of the house (for instance) are *inferred* from the front side: perhaps that even the front surface is inferred from the sense-datum.

The Associationists say that what we have called perceptual acceptance is the associating of past sense-data with a present one: i.e. when we sense a sense-datum A here and now, we recall (are reminded of) a multitude of other sense-data which we have been accustomed to sense in the past along with or immediately after sense-data of the A kind. According to these philosophers, the perceptual act just is the sensing together with this customary recalling of past sense-data.

Now if we have been anything like correct in our description of the perceptual act, both these theories must be false. And in point of fact their falseness is obvious on the very face of them as soon as we take actual instances. When we have perceptual consciousness of a house we simply do *not* infer from the sense-datum to the front surface of the material thing, nor from the front surface to the other surfaces, nor from these to the insides. We must not allow philosophers to bully us into saying that we are 'thinking' when we are not. Again, we simply do *not* recall a vast and various multitude of past sense-data which have accompanied this sense-datum in the past¹—say all the back views and side views of the house that we have ever seen.

Perhaps we ought to do one or both these things (though I hardly think it is likely). But at any rate we don't. When we sense the sense-datum the house just presents itself to us 'bodily' and as a whole, without any reasoning or passage of the mind; in short, 'without any fuss'.

Perhaps it is necessary to add that even if a material thing in fact consists wholly of sense-data actual and obtainable (as Phenomenalists think), this present thing cannot possibly now consist of sense-data which are long since dead and gone, and which have in the past accompanied or succeeded upon sense-data *like* this one now sensed by me. It must consist of sense-data which do or which could *now* accompany (or immediately succeed, this present sense-datum *itself*). Further, even if the Thing does consist wholly of sense-data, it is certain that in the perceptual act we are not analysing it into its constituents. The Thing presents itself to the mind as a whole, be its constituents what they may; it is simply not true that we are surveying a vast and various cloud of individual sense-data whether past or present or future, say all the back views and side views of the house from all possible positions.

The act of perceptual acceptance, then, is neither an act of thinking nor an act of associating this present sense-datum with a multitude of others. And both these sets of philosophers seem to have made the same mistake. They have confused the *conditions* of perceptual consciousness with perceptual consciousness itself. And even so their doctrines will only apply to what we may call acquired perceptual consciousness,

¹ A painter might possibly recall one or two—but, if so, his state would be more than merely perceptual.

when the thing whose existence we take for granted is familiar. And of course the familiarity arises from other perceptual acts; so that either view if put forward as an explanation of *all* perceptual acts would lead to an infinite regress.

No doubt it is true that if we had not performed certain intellectual acts in the past (acts rather of synthesis than of reasoning) as we went from the front of a house to the back and from one room to another, we could not *now* have perceptual consciousness of a house at all. If a lion, or a savage accustomed to living in tree-tops, were to sense my sense-datum, he would have perceptual consciousness not of a house but merely of a large cliff-like thing. But it does not follow that *we* are at this moment performing any intellectual acts. All that follows is that the mental disposition which these past acts formed in us is a necessary condition of our present perceptual acceptance.

Also it is true that if in my past experience sense-data of the A kind had not been frequently succeeded by other sense-data of kinds B, C and D, I should not now be having the perceptual act which I do have, but some other and vaguer one. But it does not follow that those former sense-data are now being recalled, that the present sense-datum is actually attended with a host of colour-expanses, pressures, smells and sounds, or with their images. All that follows is that the disposition set up by the past going-together of several different kinds of sense-data is a condition of my present perceptual act.

Perhaps a parallel from a bodily habit may assist us. A man cannot now make a good shot in golf unless he has practised in the past; he must have toiled through a number of previous shots, very many of which were bad or bungling. But these past shots are not revived in his present one. They are indeed necessary *conditions* of it, but they are not *parts* of it, nor do they in any sense accompany it. His present shot is both psychologically and physically 'clean' and has an effortless and, as it were, straightforward character. Likewise when a full-grown man talks, his childish stammerings do not accompany, nor are they parts of, his present utterance, though they are certainly necessary conditions of it. So it is with perceptual consciousness. The present perceptual act is itself 'clean' and effortless, however complicated its conditions may be.

Thus our doctrine that the primary perceptual act is a

non-active and undoubting acceptance of the existence of a material thing which presents itself to the mind bodily and as a whole, still stands unshaken ; and such an act does resemble an act of intuitive consciousness. That it has this character is just an introspectible fact, however difficult to describe.

But though it is a fact, it is a very odd one : for perceptual acceptance cannot really be intuitive at all. As we have said before, it can only be *pseudo-intuitive*. Intuiting is a form of awareness or apprehension, and what we apprehend or are aware of must be real : apprehension is just the presence of the real to the mind. Now we cannot *apprehend* (that is, know) the merely ostensible, something the very existence of which is as yet doubtful. But the object of any one act of perceptual consciousness is always as such ostensible only. The material thing which I take to exist may in fact exist and have the characteristics I take it to have, but equally it may not ; whether it does or not no single perceptual act can determine.

Thus the drunkard cannot *really* intuit his pink rat, because it is not really there. (He can and does intuit a pink sense-datum, but that is a different matter.) And equally you and I cannot really intuit the table which we take to exist on sensing a brown trapeziform sense-datum. For it is not certain that the table is there either ; or if it is certain, no single perceptual act—which is all that we are considering as yet—can possibly have told us so. Yet his and our state of mind is certainly *very like* intuitive consciousness, as we have seen. And it is not very like anything else ; (least of all is it like inference). How are we to account for this ?

To meet this difficult situation two desperate remedies have been proposed : the *Bodily Adjustment Theory* and the *Emotion Theory*.

The Bodily Adjustment Theory holds that what we have called Perceptual Acceptance is not a form of *consciousness* at all. There is the sensing of the sense-datum (which really is a form of consciousness and an intuitive one), but over and above that, there is only the automatic adjustment of our body in a certain way. The so-called perceptual act is really just an *absence* of consciousness : in particular it is the absence of discursive consciousness, e.g. of questioning or wondering, still more of inference. Because discursive consciousness is absent when it might have been expected to be

present (witness the Causal Theory with its 'unconscious inferences') we falsely conclude that another form of consciousness must be present instead. But in point of fact no other consciousness is present except the sensing.

In what way, then, does our body adjust itself? In such a way as is likely to conduce to our well-being, *if* there exists a material thing such that this sense-datum belongs to it, and if it is the particular sort of material thing which sense-data of this particular sort usually do belong to.¹ When these conditions are not fulfilled we have an hallucination or an illusion. Thus if there existed a material thing such that this sense-datum belonged to it, and if it were a rat, which is the sort of thing that sense-data of this shape usually do belong to, then the moving out of its way would be likely to conduce to one's well-being. But in point of fact there is no rat, and indeed no material thing at all, to which this sense-datum belongs.

The most favourable instance for the theory is of the following sort: Someone throws a stone at me; I see it coming and duck out of the way. This is analysed as follows: I sense a visual sense-datum, or a short series of sense-data, and the so-called seeing of the stone, the perceptual acceptance, just is the act of ducking out of the way. I am not *conscious* of a stone at all: I only behave in a certain manner. The only thing present to my mind is the sense-datum. Or again as one walks along the road, one sees a puddle and goes round it. Here again, it is said, the truth is simply that I sense a bright shiny sense-datum, and the 'seeing' of the puddle (the material thing) just is the walking round it. And when I touch a toad and withdraw my hand, I sense a chilly prement expanse, and the so-called perceptual act is just the withdrawal of my hand. (Sometimes a rather different terminology would be used: the *whole* act, the sensing plus the bodily adjustment, would be called 'perceiving'. And it would then be said that 'perceiving is a psycho-physical process'. But this makes no material difference to the theory.)

Of course in some cases the bodily adjustment would not be of so gross and overt a kind as this. It might, for instance,

¹ Or again: in such a way as *would* be reasonable *if we apprehended* that there exists a material thing such that this sense-datum belongs to it: which in point of fact we do not. (Reasonable means 'guided by conscious pursuit of our well-being on the whole' or 'by rational self-love'.)

be the turning of my head in a certain direction, or the focussing of my eyes. It might be the pointing of my finger, or the clenching of my fist, or the preparing to jump (i.e. the tightening of one's leg and trunk muscles). Or again it might very well be the uttering of certain words ¹—*sotto voce* or not—such as 'Here comes Jones' or 'Now to the left'. But the utterance of them would be just one more piece of bodily behaviour, it would not be the expression of any act of consciousness.

Sometimes a slight modification is made, and it is said that the perceptual act is not the bare occurrence of these bodily adjustments, but their occurrence plus the sensing of the corresponding kinaesthetic data or 'bodily feelings', especially muscular ones.

Let us now turn to criticism. It seems to me that the theory, though more plausible than it appears at first sight, is certainly false. No doubt there is such a thing as *quasi-perceptual behaviour* (if we may call it so) and the theory does well to draw our attention to this behaviour and to attempt an analysis of it. And in a surprisingly large number of instances, where we should say in ordinary life that we 'saw' or 'heard' or 'touched' such and such a material thing, there is no *mental* act at all except the sensing, but only behaviour. And perhaps this is always the case with the lower animals; though no one, I think, is in a position to dogmatize on the matter. But it cannot be seriously maintained that in us human beings there is never any such thing as perceptual consciousness, and that *all* the alleged instances of it (or indeed even anything like a majority of them) are simply instances of behaviour.

For, first, if all so-called perceptual consciousness is only bodily behaviour, how should we know or even conjecture that we have bodies at all? It is by *observation* that we get our knowledge (or our rational beliefs) about our own bodies and other people's: that is, by acts of perceptual consciousness; if not by any one act taken singly, then by a series of such acts. But mere behaviour, even if it includes the making of noises, is neither knowledge nor rational belief.

In point of fact the theory assumes that while *other people's* perceptual acts are just bodily adjustments, the theorist's own are genuine acts of consciousness, by which both other

¹ Or, strictly speaking, certain noises, for I am not *saying* anything, any more than a gramophone is.

people's bodies and the environment to which they adjust themselves are *observed*—not merely 'behaved towards'. And often enough it would probably turn out that while one interprets other people's perceptual acts in purely physiological terms, one is a Naïve Realist about one's own. In short, we have here just another case of that confusion between two standpoints, the physiological and the phenomenological, and that obliviousness to the fact that one is cutting off the branch that one is sitting on, which has troubled us several times before in the course of this book. An error so pervasive and so multiform deserves a name of its own. Let us call it *Physiologism*.

Secondly, if the theory were true, the ordinary man would never be able to *describe* the object of his perceptual acceptance: no more than he can describe the stimuli to which his heart and lungs automatically adjust themselves. The fact that as a rule we *do not* describe the objects of our perceptual acts, even to ourselves, by no means proves that we *cannot*. And we know that we can, for we sometimes do. Nor is such an utterance as 'Here is a post-box' necessarily a mere series of noises: it may perfectly well be the expression of an act of consciousness, and usually is—for, after all, we are not wholly gramophones.

That the perceptual act is accompanied by bodily adjustments and by the correspondent}kinaesthetic data is indeed true and important. Perhaps even it cannot occur without some muscular movement by which we adjust our body (however tentatively and slightly) to the thing that we are taking our sense-datum to belong to. That it is identical with such adjustments, with or without the sensing of kinaesthetic data, is clearly false. But indeed it seems absurd to try to *prove* that there is such a thing as perceptual consciousness!

We may now turn to the Emotional Theory. This holds that what we have called perceptual acceptance is indeed a form of consciousness, but not a form of cognition: it is simply that when we sense a certain sense-datum, we feel a certain *emotion* (and perhaps we should add, assume a certain 'volitional attitude'). This emotion or volitional attitude, again, is such a one as would be likely to result in a kind of conduct which would promote our well-being, *if* there be a material thing such that this sense-datum belongs to it, and

if it be the sort of material thing which sense-data of this kind usually do belong to : or, again, if we apprehended that all this was so. But in fact, apart from the sensing, we do not apprehend at all, nor even take for granted ; we simply feel in a certain way. (It is obvious that this theory can easily be combined with the Bodily Adjustment Theory.)

It seems plain that this theory, too, is false. No doubt perceptual consciousness in all its forms is never purely speculative ; it always does have its emotional and volitional side. One may go further and say that perceptual acceptance in particular *could* not be a purely speculative form of consciousness : on the ground that if it had been so, it would not have been acceptance or taking for granted, but would have relapsed (or risen) into opinion, or rational conjecture, or even into the bare conceiving of a possibility. If it be objected that no form of consciousness whatever is without its emotional and volitional side, which seems to be the usual teaching of psychologists, at least we may reply that emotional and volitional factors are very much more prominent in perceptual acceptance than, say, in mathematical thinking. But this must not lead us to think that it is *wholly* emotional and volitional.

For first, if it were, how should we ever have arrived at our knowledge (or our rational beliefs) concerning the material world ? How have we come even to entertain the thought that this, for instance, is a square table ? Mere sensing will not give it us : you may add to the sensing as much emotion and volition as you like, and still we are no nearer to it.

Secondly, the idea of a wholly non-cognitive emotion is absurd. Emotions have what Brentano called an 'intentional' character : they are 'towards' something. I am afraid *of* something, surprised *at* something, angry *with* so and so. And the something must be present to the mind whether definitely or indefinitely (even if it be only as a mere something or other we don't quite know what) before we can feel thus or thus towards it. It may indeed be unreal ; it may be present to the mind not as something known but only as something believed in, or barely taken for granted. Thus a man may be afraid of an entirely imaginary enemy, as the Assyrians 'were afraid where no fear was'. But still they did believe that the enemy existed.

When we say that every emotion is intentional or 'has an object', this does not of course merely mean that every emotion

is *caused* by something, though no doubt it is. What we mean is that it contains as an essential element the *consciousness* of something. An instance will bring out the difference. I am angry *because* you tell me that Jones has done such and such a thing. But it is not you or your words that I am angry *with* : it is Jones. The difference becomes still more obvious when we reflect that what I am angry with need not even exist ; the whole story about Jones and his action may be a pure fabrication, and there may even be no such person. But the cause of my anger must of course exist. We may also observe that some emotions, such as hope, are directed towards the future, which cannot cause anything. Exactly the same applies to volitional attitudes, e g the making oneself ready to act in such and such a way if so and so happens. We must have something before our mind which we propose to act *upon*, be it real or imaginary, for instance, the wasp which we prepare to hit out of the way, or the mirage-water which we resolve to bathe in.

But although the theory is untenable, we may learn certain lessons from it. As we have seen, perceptual acceptance does contain emotional and volitional elements. And the theory also does well to emphasize what we may call the *prospective* or forward-looking character of the perceptual act ; for the emotions it speaks of are 'prospective' ones, and volition is always directed towards the future. And it thus serves at least to correct a common error. Popular Science sometimes says that 'what we perceive is always already past' (because light and sound, and the nervous impulse itself, have a finite velocity). The statement is a mass of ambiguities and confusions. On the ordinary assumptions about the material world, the *sensing of a sense-datum* is no doubt always later than the physical event which is its differential condition. But if by 'perceiving' is meant *perceptual consciousness*, it would be a smaller error to say that we always 'perceive' the future, or what is about to be. (We must remember, of course, that perceiving in this sense can be erroneous.) For it is what we may call the developmental aspect of the material thing, its 'tendenciousness', that we chiefly attend to in the perceptual act. It presents itself to our mind not just as being so and so, but as about to become or to do so and so—as about to jump or to fall or to strike. (Of course what it is about to do may be just to go on as it was before—and when we are in the perceptual attitude this reliable inertness,

is not an 'activity' in the way that judging or inferring or wondering are, and why there is in it no transition of the mind, as from subject to predicate or from premise to conclusion, or from one alternative suggestion to another. We can see, too, why there cannot be in it any questioning or doubting: for if there were, it would already include at least an act of disjunctive judgement.

It may be observed that something analogous to this pseudo-intuitiveness is found in other spheres as well. When I am half-way through the *Aeneid* I do not *judge* that Aeneas is a Trojan hero, that he is the son of Venus and Anchises, and so on, every time he is mentioned. I just take all that for granted. It is all present to my mind already. It is all part of the 'logical subject' *about* whom I am now learning something new, for instance, that he consulted the Sibyl of Cumæ. But of course Aeneas is not really an object of intuitive consciousness to me, no more than the grass is. I am certainly not acquainted with him, and do not even know that he existed: just as I am not acquainted with the grass (though I am with the sense-datum) and do not know that it exists—at least no single perceptual act in isolation will tell me that it does.

When I say that perceptual acceptance is pre-judicial, it is not of course meant that it ever occurs *apart* from judgement. It is a plausible opinion that so long as we are conscious we are always judging, for even questioning and wondering seem to include disjunctive judgments. What we do mean is that perceptual acceptance differs from judging, and, further, that it is a necessary condition of certain kinds of judgement: directly of such ones as 'This grass has a heavy dew upon it', 'This table needs polishing', 'This is not a good field to land in', and indirectly of all judgements whatever about the material world. For how can we judge about a thing unless we already have it before the mind to judge about? The first kind of judgement, where we attribute a characteristic to some material thing which is now being perceptually accepted (and which is accordingly designated '*this* so and so'), is commonly called the *Judgement of Perception*. But this is a confusing name. For apart from the ambiguity of the word 'perceive', to which we have already often adverted, the phrase judgement of perception is often applied to 'this table is round' or even to 'this material thing is round': the first of which, as we have seen, very rarely expresses any judgement at all, and the second never. And Bradley's phrase *Analytic Judgement of Sense* is

even worse. For if taken literally (which perhaps its author did not intend)¹ it would only mean a judgement *about a sense-datum* such as 'this colour-expanse is sky-blue': and this is an utterly different sort of judgement. To mix up the two senses of 'perceiving' is bad enough; we need not go on to mix both of them up with sensing. But it is difficult to suggest a better name: perhaps *Judgement of Observation* would be less misleading. For what is 'observed' is not merely something which is as a matter of fact present to the senses, but is an object of consciousness; and an observer is someone who asks himself a question, and does not just unquestioningly accept.

Now if we are always judging, and if perceptual acceptance is pre-judicial, it follows that perceptual acceptance is never the whole of our cognitive state of mind; it provides only a subject for us to judge about. (Not that we are bound to judge about it even so; we may of course be preoccupied with some other subject of thought which has come before our mind in a non-perceptual manner.) And if we try to make perceptual acceptance the whole of our state of mind, the subject before us slips back, so to speak, into something less complex. I try, for instance, simply to look at the table without performing any other cognitive act. But I then find myself accepting the existence not of a table but simply of a round brown shiny-surfaced piece of matter, and *judging* about it that it is a table. This process of 'reducing' the act of perceptual acceptance, and making judgement encroach upon it, reaches its limit when we accept merely the existence of some material thing or other whose front surface this sense-datum specifies. After this we should pass over into the state of pure sensing, where there is not even the vaguest and most inattentive acceptance of anything material at all. Probably in moments of intense intellectual preoccupation we do reach this, for sensing is still going on at such moments: (not that sensing is then our entire state of mind, but that it is free from all *perceptual* admixture—the given is not being 'used'). And it may be that in some trance-like conditions sensing is not only pure, but constitutes our entire state of mind. at any rate, it seems that one might approach fairly close to this.

¹ That he did not mean it literally is suggested by two of his examples, which are 'There is a wolf' and 'This bough is broken' (for nobody could think that a bough or a wolf is a sense-datum) But his other example, 'I have a toothache', suggests that he did. See *Principles of Logic*, Bk. I, ch. 2, § 7 (p. 49 in the Second Edition)

The act of perceptual acceptance, then, owes its undoubting, non-active, and non-transitional or totalistic character (together with the *leibhaft-gegebenheit* of its object) to the fact that what is accepted in it always stands on the side of the subject thought about. If we like to say so, the perceptual act stands below the level of active thinking, of doubt, and of transitions of the mind, whereas genuine intuition stands above it. Yet in another way they are on the same level, for both the intuited and the pseudo-intuited have to be on the side of the subject, if they enter into the sphere of thought at all: and the provision of some subject by some means other than discursive thinking is a necessary condition of discursive thought itself.

But it may be objected that we have not really solved the difficulty which we raised. For how comes it that an act of mere acceptance *can* provide us with a subject to think about? How can anything except genuine intuition, that is, intuitive *knowledge*, provide us with that? How can the merely ostensible be 'present to the mind' at all? That a sense-datum should be in this sense a subject to us (such a critic will say) is quite intelligible. For sensing *is* a form of intuitive knowledge. But the sense-datum, it seems, is not a subject, except to a few aesthetes and philosophers, and to them only on rare occasions. As Reid says, 'It passes out of the mind as if it had never been'. It is the table or the tree or the rat which is our usual subject. And so far as any one perceptual act can tell us, it may not even exist, still less have the characteristics which we take it to have.

Now of course we must realize that the ostensible object, the what-is-accepted, is not a *particular* as a sense-datum is; (there could not be a non-existent or doubtfully-existent particular). What is taken for granted is, after all, *that* so and so is the case—that a material thing exists here and now, that it has a surface of such and such a sort, that it is grass, etc.—in short, what is taken for granted is a *set of propositions*. And they stand on the side of the subject thought about, not in the way in which an intuited particular does, e.g. a sense-datum when I judge that this is red: but in the way in which the proposition 'that A is B' does, when I judge that AB is C. I judge, for instance, that the Trojan hero Aeneas is consulting the Sibyl or that the spotted dog is barking again; that there was a man called Aeneas and that he was a Trojan hero, or again that there is a dog over there

and it is spotted, may then be said to stand on the side of the subject. They are what is already there before the mind of the judger; that they are doing so-and-so is only revealed to us in the act of judgement itself. It is in this sense that the object of perceptual acceptance falls on the side of the subject judged about. If we like to say so, taking-for-granted, whether perceptual or otherwise, is something which is *included* in an act of judging, but is not itself an act of judging: as the act whose expression in words, if we did express it, would be the statement A is B, may be said to be 'included in' the act whose expression is the statement AB is C. (Only if it were actually expressed, it would not be a taking-for-granted. When I say that A is B, I am *judging* that it is so, and am no longer just taking it for granted.)

Yet this is not quite all. For, after all, there is an important difference between reading and perceptual consciousness. As I read Book VI of the *Aeneid* I do take for granted the existence of Aeneas: as I sense the sense-datum I take for granted the existence of a house. So far the two cases are alike. But somehow the perceptual act seems much *more* like a genuine intuition than the other. Pseudo-intuitiveness is indeed so marked a feature of our perceptual acceptances that its 'pseudo' character is excessively hard to detect and is admitted only with the greatest reluctance: whereas in the case of Aeneas it is recognized with no great difficulty—he dissolves quite readily into a set of propositions. What is the reason for this difference?

Is it not that the relations between the given and the taken-for-granted differ in the two cases? When I sense the sense-datum I do not merely take for granted that a house exists: I take the sense-datum to be somehow a *constituent* of it. But I do not take the words to be constituents of Aeneas. They merely stand to him in the external relation of sign to significate; they bring him before my mind and that is all. In what way the sense-datum could be a constituent of the house we are not yet in a position to say. But at any rate we do regard it as, so to speak, an 'earnest' or a first instalment of the house. Within the house's total being a certain group of visual and tactual data¹ (what we shall later call a family) is *somehow*

¹ Data of the other senses are related to the thing indirectly, by means of their relation to this group. Hence in their case, in hearing, for instance, the pseudo-intuitiveness is much less marked, and our situation is more like that of the reader of a book.

included : and here is one visual sense-datum actually existing, and it is just the sort of one which might be a member of the required sort of group. But there is no sense in which the words are a first instalment of Aeneas.

Still even if there really is this material thing and this group, the present sense-datum *is* not the thing, but at most only one constituent of it. There is still a difference between this one constituent and the other constituents of the thing (sensible and non-sensible). Yet it is the *entire* thing which we are pseudo-intuitively conscious of.

The explanation of this lies in that peculiar 'negative' character of the perceptual attitude, to which we have referred before. We do not take the sense-datum to be identical with the entire thing ; one may take for granted what is false, but not what is self-contradictory, as this would be—for the constituent cannot even be conceived to be the same as the whole of which it is a constituent. What happens is not that we identify them, but that we *fail to distinguish* between them. Our state is, as it were, a dreamy or half-awake state,¹ in which we are unaware of a difference, which if we reflected would be obvious. Now the sense-datum really is intuited. And since we fail to distinguish it from the remainder of the thing, the whole thing is *as if* it were intuited, though only the sense-datum actually is so.

But if it be asked how it is possible for us to take for granted in the perceptual act propositions which we do not already know to be true—and this, I suppose, is the meaning of the question 'How can the merely ostensible be present to the mind at all'—then we must reply that the power of perceptual acceptance is just an ultimate element in human nature. (To put it otherwise, it is an ultimate fact about human nature that our visual and tactual sense-data have 'external reference'.) And we need not deny that a purely intellectual being, a mind confined entirely to intuition, recognition, and demonstration, would be entirely devoid of this power, and could not even conceive the possibility of it. For not only is it a going beyond the evidence, a taking of propositions to be true for which the intuitable characteristics of the sense-datum now sensed provide no sufficient justification : these propositions even include *concepts* which are not exemplified in the intuited data at all and cannot be abstracted from them—

¹ Cf. what Cook Wilson says about 'being under an impression that' : *Statement and Inference*, Vol. I, § 54.

namely, those concepts which make up the notion 'material thinghood'.

The power of conceiving these concepts, as soon as visual and tactual sense-data are presented which do *not* exemplify them, is an innate power; in a defensible sense of the phrase, they are innate ideas. And the power of taking for granted propositions into which they enter is likewise an innate power, which (since it is taking-for-granted, not knowing,) may well be called *Primitive Credulity*. But this should not lead us to disparage it. We need not sigh for a form of consciousness in which we are confined to what Mr. Bertrand Russell once called 'hard data', namely, our own sense-data, the laws of Logic, and some facts of memory and introspection.¹ For some kinds of 'softness' seem clearly desirable; we cannot but observe that the more intelligent a man becomes, the more he surrounds his data with thicker and thicker layers of softness—or to use an older metaphor, the more he 'transcends the given'. As we shall see presently, what we begin by taking for granted may eventually be confirmed, and indeed generally is; and without the credulity, we should never get the confirmation. Even the kingdom of this world demands a certain childlike unsuspiciousness from those who would enter it. And indeed—if we may be allowed for a moment to speak in an extravagantly teleological way—this power of perceptual acceptance is surely one of Nature's most ingenious and delicate devices.² Intuitive consciousness is wonderful enough; but that we should be as if we are intuiting a material thing when we are not, and when the something perhaps does not even exist, is very much more wonderful. It is something which a purely intellectual being could not possibly do, nor even conceive of. And we ought rather to admire the subtlety of Nature's contrivance, than to complain because we have not got that intuitive or demonstrative knowledge of matter which we think we should like better.

¹ The distinction between 'hard' and 'soft' data is introduced on p. 70 of *Our Knowledge of the External World* (Edition of 1914) and the list of hard data which I have quoted is on p. 72.

² That like many of Nature's contrivances it has an *ersatz* character—it is not intuitive apprehension but is 'just as good'—should not lessen our admiration.

CHAPTER VII

PERCEPTUAL CONSCIOUSNESS. II. PERCEPTUAL ASSURANCE

WE have tried to give an account of the simplest and most elementary form of Perceptual Consciousness, namely, the single perceptual act. (By a 'single' perceptual act is meant one whose specifying sense-datum falls wholly within the specious present) We have next to consider more complex forms of Perceptual Consciousness, such as occur when there is a series of such acts interrelated in a certain way.

The single perceptual act, we have found, has to be described largely in negative terms : it is not an intuitive apprehension, it is not inference, it is not opinion nor belief, its object does not necessarily exist ; it is undoubting and unquestioning, and inattentive to the difference between sense-datum and material thing. All we can say positively about it is that it is the taking for granted the existence of a material thing, whose front surface is specified by the visual or tactual sense-datum which is being sensed at the moment ; and that it does resemble an act of intuitive apprehension, although it is not one. In short, it is on the face of it as uncritical and unintelligent a form of consciousness as could well be conceived.

And yet, the whole of what we call our 'knowledge' of the material world (including all our Empirical Science) is somehow derived from such perceptual acceptances. From what else could it be derived ? Certainly not from mere acquaintance with my own sense-data. These are far too exiguous, too fleeting and too disconnected. 'But though derived from such non-rational acceptances, it might still be rationally justifiable in some other manner, by some form of argument having intuitable facts about sense-data for its empirical premises.' But how ? Certainly not by a causal argument, as we have shown at some length. And no other sort of argument seems at all promising at present. Obviously it will need at least one non-empirical premise. And what is that going to be ?

Thus the only thing to do is to undertake a further examination of perceptual consciousness itself; for so far we have only considered the most elementary form of it. Even if some substitute had been provided, which would establish our common-sense convictions upon a firm basis of axioms and demonstrations, it would still have been worth while to attempt this examination; for the subject is a curious and complex one, which is bound to interest any student of the human mind. And as no substitute has been provided, there is, in fact, nothing else to do. Nor should the attempt be depreciated beforehand, as a 'merely psychological' inquiry into a 'non-rational' form of consciousness. For perhaps we are taking 'rational' in too narrow a way. And there is another fact about the higher stages of perceptual consciousness which should make the objector pause. The plain man, and even the plain animal, though he never dreams of justifying his belief in the existence of matter by an inference, can perfectly well distinguish between 'the illusory' and 'the real'. He is far from putting all his perceptual acts upon one level: on the contrary, he is quite sure that some are *correct* and some are not, and quite ready to say which are which. And when the distinction between correct and incorrect comes in, it is foolish to talk of a 'merely psychological' explanation¹. At any rate, even if the process by which the plain man distinguishes this brown table from that pink rat cannot be justified, at least it ought to be exhibited.

We must begin by distinguishing what we may call for the present our *settled conviction* concerning the existence and characteristics of a particular material thing, e.g. this table, from the *primary acceptance* which constitutes the most elementary form of perceptual act. The settled conviction is by no means a mere acceptance or taking for granted. And if it is 'settled' this is not because it is unquestioning and undoubting, as the single perceptual act is; it is because the doubts have been raised and disposed of, the questions put and answered. It is settled in the sense that there has been previous suspense or unsettlement, whereas the other is not even unsettled. If we like to speak so, it is 'above the level

¹ Perhaps we might add that 'psychological explanations' (like other scientific explanations) presuppose the Principle of Induction, about the justification of which analogous difficulties arise. And if the 'hard-headed' objector thinks that this principle is only an assumption, he ought to admit that *his* Psychology is just as 'non-rational' as *our* Perceptual Consciousness.

of 'doubting and questioning, whereas the primary acceptance is below. That is an act of faith or credulity, however salutary; but this—so we all think—is something better.

Now the paradox is this: We get to our settled conviction by means of a series of perceptual acts (how else?). But if so, how can it be any better than they are? And here there are two difficulties. First as to our mental attitude: if they are all of them simply unthinking takings-for-granted, must not it be the same? Secondly as to validity: if any one of them is liable to be erroneous, or indeed to have for its object something which does not even exist at all, how can any series of them, however great, lead to a trustworthy result? And we are likely to hear from some candid friend, as often before, 'that many nothings will not make a something', and 'that no stream can rise higher than its source'.

But let us consider what we actually do in the case of the table. We look from various sides, from above and from underneath; we thump and grasp and stroke. That is, we replace our original sense-datum by various sorts of others (what sorts and how related to the first one we shall see later). And if in all the new perceptual acts thus elicited a table is still presented to the mind, we become convinced that there really *is* a table.

We can now see in a general way the nature of the process. Obviously what was taken for granted in the original act is somehow *progressively confirmed* in the others. If so, it is not really true to say that each of the perceptual acts in the series is merely a taking-for-granted. The first really is no more than that: but it is not true that the later ones are. To put it roughly, each of the later ones *would* have been a mere taking-for-granted, if it had occurred in isolation, say as a result of a lightning flash in pitch-darkness, or if it had not stood in these relations to other members of the series. (We can imagine a phantasmagoric succession of glimpses 'jumbled up anyhow', as in a delirious dream.) Further, each of these acts might have been the initial member of the series if my point of view had happened to be somewhere else to start with, in which case, again, it *would* have been just a taking-for-granted and no more. But as it is, not occurring in isolation and having the relations they do have, they display a twofold character. On the one hand, in each of them there is something new *presented to the mind* along with the new sense-datum; this is so in mere acceptance too. On the other, each of them gives some *confirmation* to its predecessors. I move my point of view, for instance, and then

a new surface is presented to my mind. But the fact that it is presented goes some way to confirm another act in which a different surface was presented, to which this one would 'fit on': the thing, then, is probably not illusory, for it has a back. In virtue of this second character these acts belong to a higher phase of perceptual consciousness, superior to pure acceptance; but they owe this superiority entirely to their relation to one another. To use the language of the Idealist tradition, they only seem to be mere acceptances through a 'vicious abstraction' whereby we erroneously separate them from the whole mental process of which they are stages.

Thus our original paradox was certainly over-stated. That a series of mere acceptances should yield a trustworthy settled conviction would indeed be extraordinary. But if only the first act of the series is a mere acceptance, and the others progressively confirm it, the difficulty is at any rate reduced. It only appeared insuperable because we neglected the peculiar relations which there are between the several members of the series.

But let us postpone further inquiry into the validity or *Erkenntniswert* of this process of acceptance-plus-confirmation; for the moment we will simply try to describe more closely what the process is. We have seen already that every perceptual act is *indefinite* in greater or less degree.¹ Thus I began by taking for granted the existence of a material thing having a particular sort of front surface, and the present sense-datum 'specifies' this front surface more or less exactly. But in the initial act I do not take for granted that it has a certain particular sort of back rather than some different sort. I do take it to have a back, but merely some sort of back or other, I cannot yet tell what: likewise to have *some* sort of sides or other, *some* sort of insides and so on, without taking them to be definitely of this sort rather than that. And even the front surface itself is only specified 'more or less', never completely. If the sense-datum is faint and small, the degree of specification will not be great. (Of course the sense-datum itself, however faint, is completely specific in all its qualities, for it is a particular existent; but we are talking of the surface of the material thing presented to the mind by means of it.) For instance, we are looking at a notice-board in the distance, and what we are conscious of is something with a more or less rectangular front having letters inscribed upon it, but we

¹ See p. 149, above.

cannot tell what letters they are, or what exactly the shape is. Thus even with regard to the front surface, plenty more specification is possible: however 'good'¹ the original sense-datum may be, it is always possible to get a more differentiated one, which will specify the surface still more.

Now we can see how the later acts come in. Their function is to *make definite* what was left indefinite in the original act of the series, that is, to present it in a more and more definite way. The some sort of back or other turns out to be a back of some definite sort, say a brick wall with twelve windows and a door. And the insides, whose nature was likewise left indefinite in the original act (though of course we took the thing to have some sort of insides or other), turn out to consist of dining-room, drawing-room, kitchen, bedrooms and so on, having such and such shapes and sizes, and arranged in such and such relations. So, too, with the other parts whose nature was left indefinite at first.

This process of *specifying the unspecified* (and especially the spatially unspecified) is what the 'confirming' really consists in. And it is *this* relation to the original act—that of making definite what it brought before the mind only indefinitely—which makes the subsequent acts something more than the pure acceptances they would otherwise have been. The first act provides a theme or a problem, and makes a start with the working-out of it (for even here one surface at any rate is more or less definitely presented), but it leaves the rest of the working-out to subsequent acts. And if the working-out 'comes off' so long as we care to try, the bare acceptance with which we began is replaced at length by a settled conviction. If on the other hand it does not 'come off', if beyond a certain point we cannot by obtaining further sense-data make definite what was indefinitely presented at the beginning, then we conclude that the original acceptance was hallucinatory or illusory. Thus in mirror-vision we can find no back for the originally presented thing, though we can sometimes find a side for it; and we cannot specify even the front surface to more than a certain degree, for we cannot obtain sense-data of more than a certain degree of brightness and differentiatedness. And I suppose there might be a purely momentary 'vision', where we can get no further specification at all; but in most hallucinations, I think, one gets a small amount of further specification,

¹ On 'good' and 'bad' sense-data, see p. 150 above, and further below, pp. 223-225.

which then abruptly stops—for if the vision just continues unchanged for a short period, that is already the beginning of a further specification, since part of what was taken for granted was the *continuance* of the thing through time. In such cases when the process of further specification breaks down at some stage, we none the less reach a settled conviction by means of it, a conviction this time of the *non-existence* of the originally accepted thing.

But here a difficulty arises. How do we know that the surface which is now being presented to the mind, the one which this present sense-datum specifies for us, is a 'back to' the surface which was presented at first, in the initial act of the series? Why should not this surface be something completely new, having nothing whatever to do with the first one? In other words, we are confronted with a question of identity. In each act of the series (as in any perceptual act) *a* material thing is presented to the mind, having such and such a surface. But what right have we to say that it is the *same* material thing all along? If we have none, then of course these later acts do nothing towards rendering definite what was left indefinite in the first; just as if you are trying to complete your description of Smith, it will not help you to be told that Jones has red hair, and Robinson is a Liberal.

It is pretty obvious that the answer must be upon the following lines, however puzzling the details may be. If we are to be certain that it is the same thing, the different surfaces must *fit together* to form one single solid, and if we are to make sure that they do this, there must be a certain sort of *continuity* in the series of perceptual acts or rather in what they present to the mind. One part of the whole surface now presented to my mind must be recognizably identical with part of the whole surface presented to my mind in a previous act—as when we move gradually along a wall or creep round a rock. Part must be recognizably identical, or else there is no reason to suppose that it is the same total surface which is being presented to us bit by bit: but there must also be something new, or else we are making no progress in our investigation. What we must not have is a 'gap' in the series. If a man went to sleep on one side of a large mountain and woke up on the other side, he could not tell from these two perceptual acts alone whether the surface presented this morning was or was not the back of the thing whose front surface had been presented to him yesterday. And if *all* his 'further specification series' were interrupted in

this way, say by sudden fits of blindness or tactual anaesthesia, he would never arrive at any settled conviction concerning the existence of an external world or the nature of its contents. He might have a complete theoretical insight into the difference between normal perceptual experience and hallucination : but he could never be sure whether his own perceptual experience was in fact a series of hallucinations or not.

A full discussion of that question must, however, be deferred. For we cannot fully understand the nature of the process which we called 'making sure that the different surfaces fit together to form one single solid' without discussing the relations of sense-data to one another : and this obscure and complicated subject requires a chapter to itself. At present we cannot exclude the purely Phenomenalistic view, according to which a material thing just *is* a very complicated system of actual and obtainable sense-data. In that case, when we begin by taking for granted the existence of a material thing, this will really mean that we take the sense-datum now sensed to be a member of a system of this sort. And when this sense-datum is said to specify the front surface of the thing (leaving the rest unspecified), the meaning will be that this sense-datum is a member not merely of the whole system of sense-data which is the thing, but of a certain sub-group within that, namely, the sub-group consisting of all the sense-data which would commonly be called views of the front surface of the thing. According to Phenomenalists, this sub-group will *be* the surface in question ; and what the present sense-datum really does when it specifies the front surface is to give us a more determinate conception of the nature of this particular sub-group, than of the other sub-groups which go to make up the whole collection which is the thing.

It is worth while to mention Phenomenalism at this point, though we cannot yet discuss it, for the following reason. We must realize that there are two sets of questions which though connected are yet in some degree separable. One is, what is the nature of the process which leads from mere acceptance of the existence of a material thing to the higher stage of perceptual consciousness which we have called settled conviction, and further, what is its validity ; the answer to this set of questions constitutes *the analysis of perceptual consciousness*. But there is another quite different set of questions concerning the nature not of this process but of its object : exactly what sort of entity is this whose existence we begin by accepting and end by being

convinced of? Does it consist of nothing but sense-data actual and obtainable, as Phenomenalists maintain? The answer to this constitutes *the analysis of material thinghood*. And two other questions are bound up with it (by Phenomenalists, identified with it)¹: what is the nature of the relation of *belonging to* which subsists between sense-data and material things, and what are the relations of sense-data *to each other* when they belong to the same thing?

Now these two sets of questions are different. Whatever analysis of perceptual consciousness we give, Phenomenalism may still be true: for it is a theory not of the confirmation but of the *confirmatum*, not of perceptual consciousness (in any of its grades) but of what we are perceptually conscious of. And, again, Phenomenalism may be false, and there may be material things in something like the old-fashioned sense. But if there are, the question how we advance from acceptance to settled conviction concerning them, and what is the nature and what the validity of either of these, remains exactly as it was. For instance, the rejection of Phenomenalism does not commit us (as is sometimes thought) to the view that the advance is made by an inference, or to the view that it can only be justified by an inference.² And a Phenomenalist, on the other hand, can perfectly well hold that the existence or obtainability of the other sense-data which go to constitute the table is *inferred* from the existence of this sense-datum with which he is initially acquainted; or again, that our acceptance of their existence can only be justified by an inference, though it is not reached by one.

But it is time to return to the main subject, the process by which we advance from acceptance to conviction. And we must now point out that the indefiniteness of the initial act of acceptance, and therefore the possibility of further specification in subsequent acts, is no mere accident, but arises from the very nature of perceptual consciousness. What is before the mind in perceptual consciousness is a material thing.³ Now

¹ For they hold that belonging to a thing means 'being a constituent of it', and that material things have no other constituents but sense-data

² Reid, for instance, both rejected Phenomenalism and maintained most strenuously that perceptual consciousness neither is, nor can be justified by inference

³ Perhaps I should remind the reader that what I am perceptually conscious of—the 'object' or 'content' of my perceptual act—need not

by 'a material thing' is meant an *individual* something. Therefore any characteristic which belongs to it at all must have an absolutely determinate form. All its characteristics must be *infimæ species* in their respective kinds. There could not be an individual thing which had just 'shape' or 'mass' or 'some chemical constitution or other'. It must have an absolutely determinate mass, shape, and chemical constitution. Moreover, since it is a material thing—not a spiritual or other sort of thing—it must be *spatially complete*. It cannot be material and have just a front and no more. It is bound also to have back and sides, top and bottom, and insides as well as outside. Further, it must have *causal characteristics*, and it must *endure* through a considerable period of time. All this follows simply from the definition of material thinghood, whether in fact there are any material things or not. All this, then, and nothing less, is being taken for granted whenever a perceptual act occurs.

But if so, the single perceptual act is bound to be very largely indefinite. For, first, no one sense-datum can specify the whole thing to us in all its spatial completeness. The nearest we get to this is in the very rare case when we hold some small thing completely inside our closed hand (a cork for instance), but even then the *inside*, though taken to be there, is completely unspecified. And ordinarily a single sense-datum specifies much less than this: namely, what we call 'the front' of the thing, while the rest is left indefinite; and if the thing is something very large, such as a mountain, not even the whole of the front. Again, no one sense-datum can specify the whole temporal extension of the thing: yet the thing is taken to have had *some* history or other before this sense-datum began, and to be going to have some history or other after it. Moreover, what the single sense-datum does specify, it always specifies incompletely. No one sense-datum, however 'good', can *fully* specify the nature even of the front surface of the accepted thing. There always could be a better one; for instance, we might use a microscope, and then the specification could be pushed further still.

Not only so: this imperfection attaches not merely to the single perceptual act but to the whole of our perceptual consciousness. For no series of perceptual acts, however great, necessarily be real. I may be having an hallucination. Even then what I falsely take for granted is that a *material thing* exists, not any other sort of entity.

could possibly complete the specification process, although the as yet unspecified margin could be reduced without limit. (Possibly this is what learned men mean when they speak of the 'inexhaustibility of the individual.')

Of course if there were what we have called an *omnisentient* being, who could sense simultaneously all the sense-data which belong to a certain thing at a certain time, for him it would be different. For him there would be no question of first accepting and then confirming, no progressive specifying of the presented but unspecified. And he could distinguish at one glance between the illusory and the real, between that which is spatially complete and that which is spatially incomplete, e.g. a mirror-image¹; for one glance of his would be equivalent to a multitude of successive human glances. And if we further imagine him to sense in one act all the sense-data which belong to the thing throughout its whole history, he would even have no need to specify an as yet unspecified past or future. But such a sort of perceptual consciousness, even in its first form, would be 'angelic' or even 'divine', for it would require a sort of omnipresence. Our own is always inexhaustive and indefinite from first to last.

Yet, we must insist once again, this is not the whole story. Even the most elementary perceptual act, the barest acceptance, not only is inexhaustive and indefinite, but (so to speak) *knows* that it is. The unspecified 'more' is brought before the mind in the very act itself. Only the front surface is specified by this present sense-datum, and that not completely; but what we take to exist is a spatially complete material thing, fully determinate in all its characteristics, and continuing through time. *That* it is all this, is actually part of the taken-for-granted: *what* form its spatial completeness takes, just what its determinate characteristics may be, just what the length of its temporal continuance may be before and after the present moment, the present act does not tell us.

It follows that what we may call the claim to be further specifiable is part of the perceptual act itself. Of course it may never actually be further specified, and perhaps even never can be (in which case it is an illusion or hallucination): but still it does make the claim, whether fulfillable or not. To put it in another way, every perceptual act *anticipates its own confirmation* by subsequent acts; or rather the conscious subject in performing the act anticipates its confirmation.

¹ On the incompleteness of mirror-images, see below, p. 228.

And if he did not, his act would not be a perceptual act at all.¹ The term *ostensible*, which we have applied to the object of perceptual acceptance above, may help to bring out this point ; for the ostensible is more than the merely entertained : it claims to be verifiable, whether it really is or not.

We have now given a description of the process which we actually go through in advancing from an initial acceptance to a settled conviction concerning the existence and character of a particular material thing. Such a conviction thus reached we shall call *perceptual assurance*. But it is one thing to ask what the process is, another to ask whether it is justified. To this second question, the question of the ' validity ' of the process, we must now turn. Are we *entitled* to the assurance which we reach in this way : have we any more *reason* for being sure of the existence of the table at the end of the process than we had at the beginning, or is it only that we *are* sure ? And our examination of the Causal Theory suggests that it is not much good to look for an external justification, drawn from something other than perceptual consciousness itself. If the further-specification process will not justify our conviction, it is not likely that anything else will.

On the face of it, it may seem plain that we have no reason for our conviction. For what has further specification got to do with confirmation ? When we begin reading a novel, the character and history of the hero are still unspecified, though we are given to understand that he had *some* character and *some* history. As we read on, they are more and more completely specified. But this is not a reason for regarding the novel as anything better than fiction. And even if (to make the analogy closer) I am one of those innocent readers who begin by taking for granted that everything in print is true, this hardly mends the matter. So, too, in a law-court witnesses B, C and D may specify further the story told by A. Nevertheless they may all be lying. All we can say is that if the hero of the novel had existed, then any true statement about him would have been further specifiable, since it could not possibly be exhaustive ; and if A had told the truth, his story would have been further specifiable, for he could not give a completely determinate account of the event in all its aspects.

¹ This anticipativeness of further acts is another thing that might be meant by saying that the isolated perceptual act is a ' vicious abstraction ' (cf. p. 173 above). But such language is better avoided.

But we can by no means maintain the converse, that if a proposition is further specifiable it must be true, or even probable.

Why, then, do we think that further specification of a perceptual act by other perceptual acts not only in fact leads to, but also justifies, the assurance which results from it? For it is quite clear that we all do think this. Is it that what we take for granted in the perceptual case is the obtainability of certain *sense-data*, and that what we have been calling the process of further specification is really just the actual obtaining of sense-data of the expected sort? If that is all it is, of course it is a confirmation. And, it may be suggested, we should be wise to maintain that it is no more, and to take refuge in the completely Phenomenalistic position that by the existence of a material thing one just *means* the obtainability of certain sense-data related thus and thus to this one which is now actual. For only thus (it will be said) can we maintain that the existence of matter is *verifiable*. For that which is to verify something else must itself be something *known*: if not, if it is only something believed, it will itself need verification. Now the only 'knowns' which are of any use in this connexion are sense-data, their qualities and relations to each other. (Plainly knowledge of myself will not help) Thus if by 'matter' one means something else over and above sense-data and the obtainability of sense-data, one's belief in the existence of any material thing is quite literally an unverifiable superstition. And why not take the cash and let the credit go?

But this is to move too fast. Phenomenalism may possibly be true (that we must discuss in due course), but we cannot allow ourselves to be hurried into it at this stage. As we have seen,¹ it is inconceivable that a theory concerning the nature of *matter* and the *de facto* relation of sense-data to material things—for that is what Phenomenalism is—should be proved by arguments concerning a particular form of *consciousness*. So there must be a confusion somewhere. Nor is it difficult to find it. Phenomenalism is really by no means a purely 'hard cash' system. It, too, makes use of 'credit', though slightly less than other theories. For one thing, the sense-data which according to it are the material thing are *simultaneously* obtainable; but they are never simultaneously obtained—we cannot see all the different sides of a thing at once, nor see the part which we are touching. A Phenomenalist may *believe* that the sense-data which (as he would put it) constitute

¹ Cf. p. 177 above.

the back of the house are obtainable when he is sensing the ones that constitute the front, but he cannot possibly claim to *know* this, in the way in which he knows that this sense-datum which he is sensing is red and square. Again, he has to admit that even one surface, still more obviously an entire material thing, is an *infinitely numerous* group of sense-data; and plainly he cannot verify the obtainability of them all. The most he can do is to 'take soundings' here and there. And if he believes that whenever he chose to take them, he still would obtain the sense-data which he expects, why is not this an unverifiable superstition? To be sure, we may suppose that an omniscient being, such as Berkeley's God, could dispense with credit; for he could sense all these sense-data, and all at once. But Phenomenalists are only human, and further, how do they know what they *would* sense, if they were in the position of Berkeley's God? If they say that they do know, they are begging the question in a concealed way: for they are saying that they do, after all, *know* that all these sense-data are simultaneously obtainable (though not by us), which is the very thing to be established. But plainly this can only be a matter of belief, not of knowledge. And if instead of God we imagine a 'standard' human observer, it is no better.

Thus the fact that in the course of the progressive further specification series we do intuitively apprehend a number of new sense-data will not really help us to see how the further specification can also be a confirmation. For even supposing the phenomenalist analysis of material thinghood to be the right one, all we learn by further specification is that certain sense-data are obtainable, which are constituents of a material thing *if* (but only if) an innumerable multitude of others are obtainable as well, (for otherwise there will be no thing for them to be constituents of) And this is a very big 'if' indeed. Any one who wants to show that the process of further specification justifies our assurance of the existence of matter, even of matter as Phenomenalism understands it, will have to look elsewhere.

Perhaps it may help us if we turn back to the analogy of the witnesses which we used just now. The mere fact that B, C and D specify further the story told by A really has in itself no tendency to show that A's story was true, since they might perfectly well be lying. Yet I believe that we

are all inclined to believe that it *has* such a tendency. Why? Obviously because we start with a certain tacit assumption: namely, that any one who makes a statement on oath is *likely to be telling the truth*. Now if it is really true that B, C and D are likely to be telling the truth, then of course the fact that they further specify A's story does make that story more probable. And if A's statement itself was initially likely to be true, of course the resultant probability of it is all the greater; (but even though there were reasons for being suspicious of A, his story would still be strengthened). For instance, A says he saw the prisoner enter the shrubbery at a certain hour. If so, he must have got there by some route or other, which, however, A has left unspecified. If B says he saw him walking down the back drive a few minutes earlier, and C that he saw him get off the bus at the end of the lane five minutes before that, these statements specify A's story further. And clearly these new testimonies do strengthen A's story, *if* there is any independent reason for believing them to be true. In the case of the novel, on the other hand, there is *no* independent reason for thinking that any of the statements are true. The very naïve reader may indeed have an inclination to take them for true, but that is not a reason.

It is necessary to lay stress on this very obvious point because it does seem to be neglected by some advocates of the 'coherence' theory of truth. A 'coherent' system of propositions is presumably a system such that if any one proposition in it is true, it strengthens the probability of all the rest.¹ But some people seem to conclude from this that any one proposition in the system strengthens the probability of the rest *whether it is itself true or not*. Further, it does follow from the nature of such a system as defined above that if there is independent *evidence* for the truth of any one proposition in it, then, too, the probability of all the others is strengthened (though of course in a less degree). But people sometimes seem to conclude that any one proposition in the system still strengthens the probability of the rest, even when there is *no* independent evidence for the truth of that proposition at all.

Let us now turn from the analogies to their application.

¹ Of course I may be quite wrong in my definition of 'coherent'. But believers in the Coherence Theory do not themselves define this term. And I do not know what the definition can be, if this is not it.

Obviously it is this. In the case of perceptual consciousness, likewise, the further specification of what is initially taken for granted would also be a confirmation of it, if there were some independent reason for thinking that each of the specifying acts is in itself *likely* to be correct ; i.e. for thinking it likely that the material thing presented in each case to the mind does actually exist, and does have that sort of surface which it ostensibly has. Likelihood is all that we should want, not certainty : just as we do not need to be certain that every witness on oath tells the truth. For if in the case of each act in the series there were some independent reason for believing that it was *at all* likely to be correct, would not this be enough to ensure that the further specification process should make the existence of the thing as nearly certain as we pleased ? It would only be a question of continuing long enough. (Of course all the acts must be 'presentings' of the same thing. Otherwise there will be a *fresh* probability at each stage, but no *accumulations* of probability.) Moreover, there is no essential difference between the initial act and the others in respect of content : though there is in respect of our attitude, which is in the one case pure acceptance, in the others not. In all of them alike a material thing is presented to the mind, and presented in the same way, by a sense-datum which specifies the then front surface in some degree : and indeed it is only an accident that the first act did not occur last or in the middle—it all depends which sense-datum we happened to start with. Thus if each of the later acts had some independent likelihood of being correct, so would the first ; it would be as if we had reason for trusting the first witness taken alone, apart from the confirmation given him by the others. If so, not only do the subsequent acts confirm the first, but it confirms them too : it is a process of mutual confirmation.

Now could this really be the case with perceptual acts ? Clearly there could never be reason to think that any one perceptual act is *certainly* correct. It is always *possible* that what is presented to the mind in a perceptual act does not exist at all, or again does not really have at all the sort of surface which it ostensibly has. But could we say that such an act is always *likely* to be correct ? Let us first be clear that *if* we can say this, it will give us all we want ; further specification will then be confirmation. I sense a sense-datum, and thereupon take for granted that a material thing exists, having

a squarish front surface, and that this sense-datum belongs to it. Now if the thing does exist, it must have other surfaces joining on to this one to make up a complete solid. I then sense a succession of other sense-data, and they present to me a number of other surfaces which do join on to the first (and to each other) in the required way. Now if there is some likelihood that these other surfaces really do exist and really do have these relations which they ostensibly have, it becomes likely that the originally accepted proposition is true : still more so, if it was at all likely to be true to start with. And *any* sort of other surfaces will do, provided only that they ostensibly fit on to the first and to each other in such a way as to make up a single solid ; for provided they do that, there will be an *accumulation* of probability, not a mere emergence of fresh and unconnected probabilities

We can now try to state more accurately what is required. We want to be able to say : the fact that a material thing is perceptually presented to the mind is *prima facie* evidence¹ of the thing's existence and of its really having that sort of surface which it ostensibly has ; or, again, that there is *some presumption in favour* of this, not merely in the sense that we do as a matter of fact presume it (which of course we do) but in the sense that we are entitled to do so. But what exactly must the presumption be in favour of, and what is to be *prima facie* evidence for what ? Clearly we shall have to say that the existence of a particular visual or tactual sense-datum is *prima facie* evidence (1) for the existence of a material thing such that this sense-datum² belongs to it, (2) for the possession by this thing of a front surface of a certain general sort. This proposition may be called the *Principle of Confirmability* ; for unless it were true, no confirmation of a perceptual act by other perceptual acts would ever be possible.

Now when we consider it the proposition does seem to be true. Everybody does think when he is acquainted with a visual or tactual sense-datum that its existence is really

¹ The words *prima facie* are, strictly speaking, redundant. I put them in to emphasize the fact that the evidence *may* be refuted, i.e. does not amount to proof.

² We must remember that even in illusion (e.g. that of the bent stick) the sense-datum, however odd it is, still *belongs* to the thing only it specifies the front surface of the thing incorrectly. It is only in pure hallucination that the sense-datum belongs to no thing at all, and is completely wild.

evidence of all this. But if someone asks what reason there is for thinking so, it is not easy to give him an answer. Clearly the Principle is *a priori*: it is not the sort of thing we could learn by an empirical generalization based upon observation of the material world. On the contrary, it itself serves (in Kantian language) to 'make possible' the observation of matter. It is not, of course, required for making possible the intuiting of sense-data or mental images, but equally clearly that cannot justify it. The Principle is indeed about sense-data, but not about their sense-given qualities and relations, such as redness and to-the-right-ness. We may notice too (anticipating a possible objection) that it does not assert that any sense-data do actually exist, nor that any material things actually exist. If it asserted either of these things, it could not be *a priori*; for it is only by experience that we can know that anything exists at all. What it does assert is that *if* any visual or tactual sense-datum exists, then its existence is evidence that a material thing also exists. That there *are* visual or tactual sense-data is simply an empirical fact.

Are we to say, then, that the Principle is self-evident, i.e. that any one who knows what the symbols comprising the statement stand for, must know at once that it is true? It would be very surprising if so complex a proposition were self-evident: and for myself I cannot see that it is, though I certainly think that it is true. Then can we deduce it from anything else, and if so, from what?

Now if the Causal Theory had been correct, there would have been no difficulty in deducing it. For although it is one thing to say (*a*) that *s* is causally dependent on *M* as its differential condition,¹ and another to say (*b*) that *s* belongs to *M*, and one of *M*'s surfaces is of a certain general sort: still, we might well have been able to show that there is a connexion between these two propositions such that given the truth of (*a*) then (*b*) is probable. Now according to the Causal Theory the existence of *s* entails (*a*). It would follow then, if the theory were correct, that given the existence of *s*, (*b*) is probable: and this is equivalent to saying what is required to be proved, viz. that the existence of *s* is evidence for the truth of (*b*). But as we saw, the Causal Theory was a hopeless failure. It could not even show that sense-data were caused at all, still less that they have material things (rather than something else) for their differential condi-

¹ Cf. Chapter IV, p. 70, above.

tion. And it seemed extremely likely that we could only show them to be caused at all, if we were already assured of the existence of matter on some other grounds. But obviously the fact—if it be a fact—that ‘causal dependence’ is evidence for ‘belonging to’ will not help us at all, if we have no means of knowing that there is the causal dependence until we *already* know that there is the belonging: as we almost certainly have not.

Thus there is no hope of demonstrating our Principle in that way. And it is hard to think of any other way which seems in the least promising. On the other hand, the principle does not seem to be self-evident, though we all think that it is true. What, then, is to be done?

It may be suggested that the Principle is just a *postulate*, which is extremely familiar to us, because in daily life we always assume it to be true: but that, however much we may be inclined to confuse the familiar with the evident, we have really no reason at all for believing that it is true, and equally no reason for believing that it is false. This presumably is what Hume and the Philosophers of As-If would say. Or, again, we may be told, by some Idealist, that it is not even a postulate, but simply a formula ‘describing the way in which our minds work’. Now both these doctrines are in effect maintaining the following proposition: *that for all that we know or have reason to believe there are no material things at all, that there is not the very slightest evidence for the existence of tables, or rocks, or trees.* And they must still maintain this, *whatever* the proper analysis of the term ‘material thing’ may be. It must still be so, for instance, (I apologize for recurring to the fact) even if the purely phenomenalist analysis of ‘material thing’ should be the correct one. Even if by the term ‘matter’ we are to understand nothing but a system of sensations and possibilities of sensation (to use Mill’s language), we have still no reason whatever for asserting the existence of matter, unless the Principle of Confirmability is true. There would only be ground for asserting that a miserably exiguous dribble of ‘sensations’, namely my own, (for there could be no ground for asserting the existence of other sentients)—that this poverty-stricken and orderless remnant had actually existed. And is it not plain that in fact we have ground for asserting vastly more than this? I do not claim that we *know*, either intuitively or demonstratively that any material thing exists, if the word ‘know’ is used quite strictly. But that we have

evidence for the existence of material things in *some* sense of the phrase 'material thing', e.g. for the existence of numerous tables, trees and rocks, is perfectly certain and obvious. If so, the Principle cannot be just a postulate, nor yet a description of 'the way our minds work', whatever exactly that may mean.

In this difficulty I can only suggest that we should be careful to put first things first.¹ We must start our inquiry, so to speak, from the right end, from that which we are quite certain of. And the right starting-point here is simply the nature which perceptual consciousness is found as a matter of fact to have. If we reflect upon this, we notice at once that the doubters whom we have just mentioned are really saying that there is only *one* form of perceptual consciousness, namely, the non-rational taking-for-granted which we have called Perceptual Acceptance. They hold that the further-specification series is simply a series of further acceptances in which the *acceptum* becomes progressively more and more complicated, and that the result of it is still only acceptance, but a more or less stable acceptance instead of a passing one. Now I want to maintain that this contention is just false, because it ignores differences which are really obvious. It seems to me indubitable that we do often advance by way of a further-specification series to something quite different from the mere acceptance with which we began. It simply is the case that the existence of the material thing (merely accepted at first) becomes *more and more probable* as we specify further. I cannot prove this, but I think it is just evident. We simply find this increase of probability going on (or this accumulation of evidence); we just do find ourselves passing beyond mere taking-for-granted, whether we like it or not. I want, then, to maintain that it is obviously false to say that all perceptual consciousness is merely acceptance. There are also two higher forms of such consciousness, namely, the process of Perceptual Confirmation (as we may now call it) and the state of Perceptual Assurance: 'higher' in the sense that what we are assured of has been *verified*, not only accepted, and that the process of Perceptual Confirmation is the verifying.

¹ The error of 'being surprised at the wrong things' might almost be called the Philosopher's Fallacy. The most illustrious victim of it is perhaps Hume.

Now this is the only way to vindicate the Principle of Confirmability. It is not self-evident in the sense that a mind which knew nothing else at all could know it to be true, or even that a mind entirely destitute of senses could know it to be true, though possessed of all the other knowledge in the world. We can only know it to be true if we consider *instances of its application*; we must simply reflect on the perceptual consciousness which we actually possess.

Moreover, we must take this in its completeness; we must not merely consider each form of it in isolation. For really it is one complex form of consciousness, having three phases or stages: it is, so to speak, acceptance-specification-assurance,¹ and none of these can be understood without reference to the others. When the percipient stops short at acceptance and goes no further (as he often does), perceptual consciousness has only *begun* to occur: it is not an instance of complete perceptual consciousness at all. And indeed the acceptance bears upon its face, so, to speak, the marks of its incompleteness; for, as we have already pointed out, part of what is accepted is that further specification is possible.

Now if we do reflect on actual instances of complete perceptual consciousness, we find that it is in each case *evident* that by further specifying our original act we do so far confirm it. The Principle of Confirmability is simply a technical way of stating this evident fact. To put it otherwise, it is simply a way of stating the *structure* of any complete instance of perceptual consciousness, by exposing the relations which the three phases of it have to each other.

Certainly perceptual consciousness is a peculiar form of consciousness not much like any other. For instance, it is not intuition, and it is not demonstration. That we have it at all may be a deplorable fact, if you will. It would be much nicer, perhaps, if we did not have it, or had something else instead. But we do happen to have it, and there it is. Consequently any attempt to demonstrate that what we are perceptually assured of does not or may not exist, or that it does not or may not have the characteristics which we are assured that it has, is bound to use arguments which are beyond all comparison less certain than that which they set out to overthrow. Such attempts then simply cannot be taken seriously,

¹ This includes the case where the specification and the resulting assurance are *negative*, as when we detect an illusion or hallucination.

though of course they may incidentally throw light on something else.

I need hardly say that Berkeley, for instance, was not attempting anything of this kind. When he said he was disproving the existence of matter, he only meant that he was offering a new *analysis* of what matter is, viz. that it consists wholly of sense-data. The following however would be an instance of such an attempt. It might be said that our assurance of the existence of this, that and the other material thing can be explained in a purely psychological way, the significance of 'purely' being that the explanation claims to be valid whether material things in fact exist or not. But how is the explanation done? Presumably by reference to the *practical* side of our nature. If we did not feel quite sure of the existence of various pieces of matter our actions would be ineffective: we should never be able to satisfy our desires, or even to survive for a day. Thus I am bound, it is said, to be convinced of their existence, whether in fact they exist or not, because I simply cannot afford to be doubtful of it. Now this argument overthrows its own premises. For *practice* is concerned entirely with the material world; it consists in changing the qualities and relations of various material things, and if they did not exist there would be nothing to be practical about. Moreover, unless we really possess bodies, which are material things, and can be damaged by other material things, it is pointless to speak of our *surviving*: for obviously it is not the survival of a disembodied spirit which is meant. And if the argument is put forward as 'biological' instead of 'psychological' (which it often is), the fallacy simply stares us in the face. If the material world is non-existent, as likely as not, what becomes of Biology? If it is not the study of living *bodies*, what is it? Here we meet another form of the old error which we have so often met before. The biologizing sceptic undertakes to explain, probably by an elaborate evolutionary argument, that his neighbour's conviction of the existence of matter is but a beneficial delusion, while all the time he regards his own as infallible. But if he were to take a dose of his own medicine and apply the argument to himself, he would find that he had destroyed the ground of his own belief in Evolution, and even in the existence of his neighbour. And curiously enough, it often happens that those who use arguments of this sort are the very people who maintain in other contexts that there is

no reason to believe in the existence of anything *except* 'things that you can touch or see', evidently assuming that the existence of those is perfectly indubitable.¹

It may now be granted that our assurance of the existence of material things cannot be overthrown by argument. 'But still', it may be said, 'we have no positive reason for thinking that there *is* any matter, so that after all it is still *possible* that perceptual consciousness, even at its best, is nothing but consistent hallucination.' But I am not sure that this suggestion even means anything. Is it not like the doubt of the man who asks, 'What reason have I for thinking that I have any duties?' The answer is, No reason: but if you happen to possess a moral consciousness, it must be obvious to you that you have them. *Within* the sphere of the moral consciousness there may be 'reasons': the reason why I ought to catch the nine o'clock train is that I ought to keep an appointment in London at twelve. But though my having one particular duty is the reason for my having another particular duty, our conviction of the reality of duties in general is not the sort of thing which can have a reason; it cannot intelligibly be called either a reasonable or an unreasonable conviction, and the application of either epithet to it is simply a rhetorical device for arousing one or another sort of prejudice. So too here: my assurance of the existence of this newspaper is a reason for thinking that other material things exist, such as printing machines, human organisms, other copies of the newspaper. It is reasonable to think that they exist if it does; and unreasonable, perhaps, to think that any material thing exists having the characteristic of being a sea-serpent. But this relation of 'being a reason for' is *within* the sphere of perceptual assurance. That assurance as such, our consciousness of the reality of matter *in general*, cannot intelligibly be called either reasonable or unreasonable: it is that which *enables us to give* reasons of a particular kind for certain more specific beliefs.

Further, when it is said that the mutual confirmation of

¹ Cf. the Gender Rhyme:

Masculine will only be
Things that you may touch or see
As *curculio*, *vespertilio*,
Pugio, *scipio* and *papiho*.

Reading 'genuine' for masculine, we have here an excellent summary of a very prevalent philosophical system.

perceptual acts which yields perceptual assurance may perhaps be nothing better than consistent hallucination, this again is an incoherent suggestion. Suppose for argument's sake that we did have an hallucinatory perceptual act which permitted of further and further specification by other perceptual acts, so long as we cared to try; what *meaning* would there be in calling it an hallucination? Let us, for instance, imagine a ghost which can be seen from all sides and from however short a distance, which is presented by means of tactual data as well as visual, and which you cannot walk through. Plainly it would not be a ghost at all: it would simply be a curious and unexpected sort of real object. To continue to call it hallucinatory after that is simply to misuse language¹; for the *definition* of 'hallucinatory' is 'incapable of being further specified with regard to back, sides, etc.' And if some physiologically-minded reader still objects that since there can be one 'centrally induced sensation' there could conceivably be a series of them, so related as to yield a progressive specification series, we must refuse to be moved by this objection. For unless the probability of their being centrally induced falls very rapidly as the further-specification series goes on, we have not the slightest ground for believing that there is ever such a thing as the central inducing of sensations at all: for the 'centre' which is referred to, that is, the brain of the percipient in question, is a material thing like others, and our knowledge of its workings comes wholly from perceptual acts. For the same reason it is impossible to *define* 'hallucination' in causal terms, as such an objector would presumably like to do. For unless we can *already* draw the distinction between hallucination and non-hallucination in some other way, we have no opportunity of learning anything at all about the causal characteristics of matter, whether of brains or of other things.

We may sum up this part of our discussion by saying that perceptual consciousness is an *ultimate* form of consciousness not reducible to any other: and further, it is an *autonomous* or self-correcting form of consciousness. The criteria by which we determine the correctness or incorrectness of a particular perceptual act are themselves perceptual; and no considerations drawn from any extraneous, that is non-perceptual,

¹ Just as if one could go 'through the looking-glass' like Alice, what one saw in the glass before one started could no longer be called a mirror-image, for it would have a back and insides.

form of consciousness can have the least tendency either to justify such an act, or to invalidate it.

When a perceptual act is confirmed by its own proper criterion, that is, by being further specified (in the manner described) by subsequent perceptual acts, then we have perceptual assurance concerning the existence and the general nature of the material thing presented in it. That the material thing does exist and does have that general nature is then as nearly certain as it can possibly be, though of course there is always more to be discovered about its detailed characteristics. Nothing 'better' than perceptual assurance can be got, nor is needed, and any one who asks for more is asking for he knows not what. For nothing 'better' can really be conceived of: perceptual assurance is the best that can be got along that particular line. It is, so to speak, the *optimum* condition of that particular side of our cognitive nature and with regard to that particular sort of object. In its own kind it is indeed above criticism, being itself that by reference to which we criticize. It is no good thinking that we ought to have been able to substitute for it some other form of consciousness (say demonstration) and being disappointed because we cannot. For it is the only one by which we have any conception of a material world at all: to a being possessed of only the powers of sensing, of memory, of introspection, and of deductive reasoning the word 'matter' would have been utterly without meaning.

We have said that we have perceptual assurance 'concerning' the existence of such and such material things. We must now try to make this more precise. And first a distinction must be drawn between what we are assured of and what we must know *in* being assured of it. For perceptual assurance is not knowledge (neither knowledge by acquaintance nor knowledge that something is the case): it is a form of rational belief. But rational belief always *contains* knowledge; thus the rational belief that A is B contains the knowledge that there is evidence that A is B. (The other factor in belief is a peculiar attitude of 'being in favour of' the proposition for which the evidence is.¹) What I am assured of, then, is simply that *there exists* a material thing of such and such a shape, etc., and to which such and such sense-data belong.

¹ If there had been simply the 'being in favour of' without the knowledge, we should have had not rational belief but acceptance (Cook Wilson's 'being under an impression that').

What I know in being assured of this is that there is very strong *evidence* for the existence of such a material thing, that in relation to this evidence it is very much more likely than not that there exists a material thing to which such and such sense-data belong, and having a shape of such and such a sort.¹ Thus what I know in being assured is very much more complex than what I am assured of. This knowing, we may add, is very inattentive; for when we are in the perceptual attitude it is matter, and not the evidence for the existence of matter, which interests us most.

We now meet the following difficulty. The further specification of the originally accepted thing could not possibly be completed in any finite series of perceptual acts, on account of the 'inexhaustibility of the individual'.² But until it is completed the existence of the thing cannot be certain. How then can any finite specification-series bring us any nearer to certainty, i.e. increase the original probability (derived from the initial act of the series) by any amount at all, however little? Yet it is plain that in fact every act in the series does increase the probability.

To solve this difficulty we must first draw a distinction between the probability that a material thing of a certain *determinable* character exists, and the probability that a material thing of a certain *absolutely determinate* character exists. For our purposes the following application of this distinction is the most important one. We must distinguish (a) the probability that a spatially complete thing exists having a certain determinable sort of three-dimensional shape, say 'approximately cylindrical': and (b) the probability that a spatially complete thing exists having a certain absolutely determinate three-dimensional shape falling under this determinable.

Now if we are to have a rational assurance of the existence of a material thing, it is absolutely essential that probability (a) should increase during the further specification process. For without spatial completeness, i.e. unless there is a complete three-dimensional solid with back and sides as well as front, there is no material thing at all. But probability (b) does not matter. It is not necessary for establishing the *existence* of the thing that we should establish what the absolutely deter-

¹ Whether the two statements, 'E is evidence for p' and 'in relation to E, p is probable', really state anything different, it is not necessary to decide. I believe that they do not.

² Cf. pp. 178-179, above.

minate shape is, e.g. that we should be able to say exactly how far in every part the shape departs from the cylindrical. And the fact that we cannot do this, perceptual consciousness being always in some degree indefinite, is really of no importance. We do need to determine the originally indeterminate object of acceptance far enough to make probable the existence of a spatially complete thing of some shape, and in doing so we cannot help determining in *some* degree what particular kind of spatially-complete shape it is. But since degrees of determination below that are unimportant for our purpose, it need not trouble us that they are endless.

Secondly, although an endless series of perceptual acts would be required in order to specify the shape with absolute completeness, it does not follow that we can never get any nearer to this unattainable goal in any finite time. For we might approach it asymptotically, as the series $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots$ approaches 2, but never reaches it in any finite number of steps. There might always be some increment of determination at every stage, but it might get less, and less as we went on. the alternatives between which we were deciding at each step might 'make less difference to' the whole nature of the thing, e.g. to its whole shape. At an early stage it would be decided, for instance, that the shape is nearly cylindrical, and nowhere near spherical or cubical: here is a big difference. At a later stage the sort of thing decided would be that the surface is dented slightly inwards and not slightly outwards in such and such a part, and that this little dent is just deeper than this other one. Now this asymptotic approach to complete determination is what we actually do get in the further-specification series. After the initial steps the increment of determination which each new act gives becomes progressively less and less important. And the use of instruments like magnifying glasses and microscopes is no exception, for the more they tell us of the shape of one small part, the less they tell us about the whole.

Exactly the same considerations apply to location, size, and causal characteristics, and also to 'secondary' qualities like colour and hardness: for all these are further specified in the further-specification series. (In what sense the secondary qualities may be said to qualify the thing at all, we shall see later.)

It may, however, be thought that if the phenomenalist analysis of material thinghood were correct the difficulties arising from the infinity of the specification-series could not be

disposed of in this way. For not only would the thing have an absolutely specific shape (Phenomenalists have to admit that in *some* sense it has this, otherwise it is not material thinghood which they are analysing): it would also be true that even a single surface of it would be a group having infinitely numerous members. And does not this add an extra difficulty, over and above the one about absolute determinateness, since we cannot possibly sense more than a small number of them?

But this is not really so. For the group would be a *series* of shapes having a certain limit, namely, what Common Sense would call 'the real shape of that surface'. The series will consist primarily of perspectival distortions, and there will be other sub-series of distortions branching off from these.¹ In that case our task would be to determine further what may be called the *character* of this series, and of the other series which together with it would make up the whole material thing. And this we could do without going through all the individual members, for the character of the main or perspectival series depends upon the nature of its limit, and the character of the sub-series depends upon that of the main one.

(We shall argue later that Phenomenalism is false. But as it is by far the most instructive of all errors in the Theory of Perception, it is important to give the phenomenalist philosophers all the help we can, and to save them from being refuted for the wrong reasons.)

Thus it seems possible to settle the doubts raised above. Although the further-specification series can never be completed, it seems that a finite series will give us all the confirmation we want. If so, could we not maintain that at the end of it we do know that a material thing of a certain determinable sort exists (not merely know that there is evidence of its existence), though we only have rational² beliefs concerning its determinate character? I fear we cannot. There are other difficulties in the way, which cannot be so satisfactorily settled.

First, there is another and more serious one arising from the 'infinity' of the specification-series and the 'inexhaustibility' of the *specificandum*. It is possible for the specification-

¹ The nature of these series will be much more fully discussed in the following chapter. Cf. pp 208, 217-223

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series to proceed with perfect success so long as we keep at more than a certain distance from the place where the thing purports to be, and then to break down completely when we come nearer (i.e. when the sense-data have less than a certain minimum 'depth'). As we say, the thing might vanish as we approach. Thus there might be a mirage which still maintains itself as the traveller rides round it, so long as he keeps more than three miles away: but vanishes entirely when he comes nearer. The same thing is theoretically possible with an extinct star. So long as we kept far enough away we might be able to proceed with our further-specification series, finding back, sides, top and bottom by means of powerful telescopes years after the star had ceased to exist, but if we came nearer we should be undeceived. So, too, with telepathic and other 'phantasms', such as are studied in *Psychical Research*. I do not know whether there are in fact phantasms which can be seen from all sides. I know no reason why there should not be. But it is notorious that they cannot be touched, and vanish from sight at about touching distance. The most curious instance of all is that of the 'rotating mirror-image'.¹ If a thing at whose mirror-image I am looking is slowly rotated in various directions I shall get just such a series of sense-data as if I were walking round a real thing and specifying it further. But this confirmation of the existence of a thing behind the mirror stops abruptly as soon as I try to reduce the 'depth' of the sense-data beyond a certain degree. I cannot get any visual data of smaller depth, and I cannot get any tactual confirmation at all.

We must not, however, think that the obtaining of tactual data is decisive: that if only we can get *tactual* confirmation of the existence of a spatially complete thing of a certain determinable sort, then its existence is certain, and no more is required. Is it not always *possible* that if we tried to get tactual data more differentiated than these (say by using the finger-tip instead of the palm of the hand, or a delicate probe instead of the finger-tip), we should fail to get any more at all. Just as we failed after a certain point to get any more visual ones in the cases described just now? Of course if we have evidence of the existence of a material thing, then we have evidence that we *can* get further sense-data *ad libitum*, since

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the thing is by definition 'inexhaustible': but it is only evidence, not conclusive proof.

Such cases do seem to show that even the existence of a material thing of such and such a determinable sort cannot be *certain* until the further-specification series is completed, which it never can be: (and if it were to be completed, of course we should also know what the determinate character was). But they do not show that we cannot obtain extremely strong *evidence* of its existence by means of a further-specification series. Nor do they show that the series has not the 'asymptotic' character attributed to it above. When we have got a certain distance with the series, the increment of probability which could be added by proceeding further, either in a visual or tactual way, becomes quite small. Nevertheless, if *any* increment can still be added, as it always can, the existence of the thing is not absolutely certain. We must not forget, as we are sometimes apt to do, that even an exceedingly probable proposition may still be false.

Such cases also teach us something else, namely, that there may be a quite complicated group of sense-data not belonging to a material thing at all. In the case of the mirage, for instance, the existence of the material thing presented to the mind (say a pool of water) fails to be verified, but that a system of visual sense-data exists, having a complicated structure, is established beyond all doubt. And there is nothing indeterminate about this system itself, though the material thing is indeterminably *presented* by means of it: the system just does have a certain character and certain constituents. We must not think that the only entities in the world except minds are material things and individual sense-data, for these groups are neither. If we want a name for them, we might call them *apparitions* (for the term hallucination should be reserved for a different class of cases, where the sense-datum is quite 'wild' and there is no serious suggestion of spatial completeness). But this does not seem to be a really suitable name. Indeed, no suitable one is available: for that common-sense snobbery, or prejudice in favour of the practically important, which afflicts us all more or less, has caused even philosophers to overlook them, and they have hitherto found no place in any 'inventory of the universe'.

But to return: it is now clear that perceptual assurance can never be knowledge; it can only be rational belief, based on extremely strong evidence. We must next proceed to

show that the same conclusion also follows in a different way from two considerations with regard to *time*. In the first place there is a difficulty about 'subjective successions'. The confirmation of an initial act of acceptance can only be done by a *succession* of further acts, elicited by a series of sense-data. But if so, how can I know that any front surface still continues to exist while I am engaged in verifying the existence of a back surface? It may indeed be said, 'You can go and look at the front surface again and so make sure that it is still there'. But obviously this common-sense description of what I can do begs the question. What I can actually do in most cases is to get a new sense-datum very like my original one as often as I please (not identical with it, for there is no reason to think that sense-data can exist unsensed). But does not this fresh evidence still leave it *possible* that nothing really existed there in the interval? And it may even be suggested by some still unregenerate doubter that we have really no positive reason whatever for thinking that there is a continuing front surface, which goes on existing while we are specifying the others.

On the contrary, we must reply, we have very strong reason. Our reason for thinking that the front which we are '*not* now looking at' still exists, is as strong as our reason for thinking that the back exists which we '*are* now looking at'. (When we say we are 'looking at' a certain surface, we mean that it is this particular surface which our sense-datum is specifying.) If any one doubts its strength, we have only to remind him that what the sense-datum gives evidence of is the existence of an entire material thing, that is, of something *spatially complete*, and not just of a surface: so that in getting evidence that one surface exists, I am *ipso facto* getting evidence of the existence of other surfaces as well, in fact of as many as are needed to make up a complete solid—and of an inside into the bargain. The only difference is that in any given perceptual act one of the surfaces is being specified more closely than the rest; but all alike are being 'evidenced'. In this sense, though in no other, we always 'see round the corner',¹ and touch round the corner too.

The only legitimate doubt is whether the front surface might not have *changed* in some respect while we were looking

¹ Of course it is never possible to *sense* round the corner. But we always have a *perceptual* consciousness of what is round the corner.

disposed of in this way. For not only would the thing have an absolutely specific shape (Phenomenalists have to admit that in *some* sense it has this, otherwise it is not material thinghood which they are analysing): it would also be true that even a single surface of it would be a group having infinitely numerous members. And does not this add an extra difficulty, over and above the one about absolute determinateness, since we cannot possibly sense more than a small number of them?

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Thus it seems possible to settle the doubts raised above. Although the further-specification series can never be completed, it seems that a finite series will give us all the confirmation we want. If so, could we not maintain that at the end of it we do know that a material thing of a certain determinable sort exists (not merely know that there is evidence of its existence), though we only have rational² beliefs concerning its determinate character? I fear we cannot. There are other difficulties in the way, which cannot be so satisfactorily settled.

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¹ I am sorry I cannot remember who first called my attention to this curious and very instructive case. Cf. also what is said about mirror-images below, p. 228.

the thing is by definition 'inexhaustible': but it is only evidence, not conclusive proof.

Such cases do seem to show that even the existence of a material thing of such and such a determinable sort cannot be *certain* until the further-specification series is completed, which it never can be: (and if it were to be completed, of course we should also know what the determinate character was). But they do not show that we cannot obtain extremely strong *evidence* of its existence by means of a further-specification series. Nor do they show that the series has not the 'asymptotic' character attributed to it above. When we have got a certain distance with the series, the increment of probability which could be added by proceeding further, either in a visual or tactual way, becomes quite small. Nevertheless, if *any* increment can still be added, as it always can, the existence of the thing is not absolutely certain. We must not forget, as we are sometimes apt to do, that even an exceedingly probable proposition may still be false.

Such cases also teach us something else, namely, that there may be a quite complicated group of sense-data not belonging to a material thing at all. In the case of the mirage, for instance, the existence of the material thing presented to the mind (say a pool of water) fails to be verified; but that a system of visual sense-data exists, having a complicated structure, is established beyond all doubt. And there is nothing indeterminate about this system itself, though the material thing is indeterminably *presented* by means of it: the system just does have a certain character and certain constituents. We must not think that the only entities in the world except minds are material things and individual sense-data, for these groups are neither. If we want a name for them, we might call them *apparitions* (for the term hallucination should be reserved for a different class of cases, where the sense-datum is quite 'wild' and there is no serious suggestion of spatial completeness). But this does not seem to be a really suitable name. Indeed, no suitable one is available: for that common-sense snobbery, or prejudice in favour of the practically important, which afflicts us all more or less, has caused even philosophers to overlook them, and they have hitherto found no place in any 'inventory of the universe'.

But to return: it is now clear that perceptual assurance can never be knowledge; it can only be rational belief, based on extremely strong evidence. We must next proceed to

show that the same conclusion also follows in a different way from two considerations with regard to *time*. In the first place there is a difficulty about 'subjective successions'. The confirmation of an initial act of acceptance can only be done by a *succession* of further acts, elicited by a series of sense-data. But if so, how can I know that any front surface still continues to exist while I am engaged in verifying the existence of a back surface? It may indeed be said, 'You can go and look at the front surface again and so make sure that it is still there'. But obviously this common-sense description of what I can do begs the question. What I can actually do in most cases is to get a new sense-datum very like my original one as often as I please (not identical with it, for there is no reason to think that sense-data can exist unsensed). But does not this fresh evidence still leave it *possible* that nothing really existed there in the interval? And it may even be suggested by some still unregenerate doubter that we have really no positive reason whatever for thinking that there is a continuing front surface, which goes on existing while we are specifying the others.

On the contrary, we must reply, we have very strong reason. Our reason for thinking that the front which we are '*not* now looking at' still exists, is as strong as our reason for thinking that the back exists which we '*are* now looking at'. (When we say we are 'looking at' a certain surface, we mean that it is this particular surface which our sense-datum is specifying.) If any one doubts its strength, we have only to remind him that what the sense-datum gives evidence of is the existence of an entire material thing, that is, of something *spatially complete*, and not just of a surface: so that in getting evidence that one surface exists, I am *ipso facto* getting evidence of the existence of other surfaces as well, in fact of as many as are needed to make up a complete solid—and of an inside into the bargain. The only difference is that in any given perceptual act one of the surfaces is being specified more closely than the rest; but all alike are being 'evidenced'. In this sense, though in no other, we always 'see round the corner',¹ and touch round the corner too.

The only legitimate doubt is whether the front surface might not have *changed* in some respect while we were looking

¹ Of course it is never possible to *sense* round the corner. But we always have a *perceptual* consciousness of what is round the corner, however indefinite that consciousness may be.

at the others, and then changed back again : as a man with his back to us might blush, and by the time we looked at his face again, all trace of the blush might have gone. This possibility can never be absolutely ruled out. But of course there still *is* a front surface all the time, which is the important point. All that it comes to is that we can never be certain that the thing has remained in all respects unaltered throughout the further-specification process. But though this possibility cannot be absolutely ruled out, the probability of it diminishes without limit as we perform the further specification faster and faster. Thus although further specification does always involve subjective successiveness, this fact does not make it any less certain that the surface originally presented *has* a corresponding back, sides, insides, etc., and that this back likewise has a front.

But unfortunately the temporal character of material things also gives rise to another difficulty. Our perceptual consciousness suffers frequent *interruptions*. It ceases altogether on some occasions, as when we fall asleep, or become in some other way 'unconscious', as we call it.¹ Not only so : it is never directed upon the same thing for very long—we look first at this thing, then at that. How then can I be sure that it is the *same* thing A which is presented to my consciousness before the interruption and after it, e.g. that when I wake up in the morning or return from a walk it is the same table as before? Worse still. how do I know that a particular material thing ever exists at all while I am unconscious, or conscious of some other thing? I do not think we can claim to *know* in either case. But we can claim to have more or less strong *evidence*. To put it in a deliberately paradoxical way : just as we may be said in a sense 'to see round the corner', so we may be said in a sense 'to see things when we are not there'. For we must again remind ourselves that what the sense-datum gives evidence of is the existence of a *material thing*. Now this by definition is not something merely momentary, but a *continuant*, which persists through time. And we do happen to have a form of consciousness, namely the perceptual, in which continuants and not merely events are brought before the mind : conceivably we might not have had such a form of consciousness, but as a matter of fact

¹ To 'become unconscious' means to lose *perceptual* consciousness : it does not really mean to lose any sort of consciousness, though of course this may actually happen.

we do. Thus if in a certain perceptual act I have evidence of the existence of a material thing at all, *ipso facto* I have evidence that it persists beyond the date of that act, both before and after it. To say this may seem very bold, but it is really only saying once again that it is material things, and nothing less, that we have perceptual evidence for. And the contention only sounds rash because of our inveterate tendency to mix up perceptual consciousness with sensing, and material things with individual sense-data: once we refuse to yield to these confusions, we see that from its very nature any perceptual act is bound to be among other things a prediction, or (if prediction must be knowledge) a prognostication at any rate, and in the same way it must be 'retrodictive' as well.

What I have not yet got evidence of is the *determinate form* which the thing's future history will take (or which its past history has taken). Only later (or earlier) perceptual acts can give me evidence about that. If they do not take place, because I become unconscious or turn my attention elsewhere, I am left in the dark about it. And if after an interval I have a new perceptual act, or group of them, this too will give me evidence of the existence of a certain material thing, and this evidence too will be both retrospective and prognosticative. If so, there may be ground for thinking that it is the *same* thing, since I have retrospective evidence (not of course proof) that it existed at the required date. The future ostensibly following upon *that* present was unascertained: the past upon which *this* present ostensibly followed is unascertained. Could this present be the future of that one, and that the past of this one? Obviously it all depends upon the details of the particular case. Is this state of affairs now evidenced the sort of one which could 'join on to' that state of affairs then evidenced, in such a way that both could be stages in the history of one thing? In order to answer this question, we must answer two others: (a) are they such that they could be indirectly continuous with regard to shape, size, location and secondary qualities, (b) are they such that they could both fall under one immanent-causal law as cases of it?

Obviously we could never give a *certain* answer to either of these questions, but at most only a more or less probable one. The degree of probability would depend partly on the length of the interval between the two perceptual acts; the

shorter the interval, the greater the probability. And partly it would depend on the sort of immanent-causal law under which the two states of affairs were capable of being subsumed : if that were the sort which is exemplified in a very rapid or radical change (as in the case of melting ice), the probability that it is the same thing will be less ; and greater, if it is the sort which is exemplified in slight or slow change, or in what we call quiescence (as in the case of a flower or a rock).

In face of these difficulties about time and succession it is plain that no perceptual assurance worth having could amount to more than rational belief. The only sort worth having is an assurance not merely that there exists some piece of matter or other, but that it is the *same* piece of matter which is presented in a series of perceptual acts even when the series is interrupted. And we can and do have assurance of this. I really am assured both that there is a table here, and that it is the same table which my sense-data of an hour ago belonged to. But I cannot claim to *know* this, in the strict sense of the word 'know'. I do know that there is evidence for this proposition and for innumerable others like it. But the evidence, though often extremely strong, is never perfectly conclusive. And it is apt sometimes to seem stronger than it is, because we habitually take for granted the validity of certain 'laws of Nature' (particularly those of Physics and Chemistry) which are themselves based upon what we call observation of material things : they accordingly presuppose the continuing identity of material things, and cannot be used to establish it.¹ Even if material things had been timeless, there would still have been the other difficulty arising from the existence of 'apparitions' such as mirages and the like : and this could only be avoided if we had been *omni*-perceptient, instead of having the fragmentary and cursory perceptual consciousness which we do have.

We may now sum up the results of this chapter. We have tried to show that perceptual consciousness in its complete and fully developed form does not consist simply in

¹ It may be said that they only presuppose that there are *continuous series of events*. I do not propose to dispute this doctrine. I shall only remark (1) that it does not *deny* the identity, but only gives a curious *analysis* of it ; (2) that in any case these series of events are taken to be *continuous* (or at least to be nothing like so interrupted as our observations are), so that the difficulty mentioned in the text still remains.

taking for granted or acceptance. That is only the first stage. In the later stages, the original acceptance is confirmed (or refuted) by a further-specification process which results in a state of perceptual assurance, positive or negative. This assurance is a rational conviction of the existence of a material thing having a certain determinable character (in the negative case, of its non-existence): that the thing does exist is then *almost* certain, though no specification-series of finite length can make it completely certain. Thus perceptual assurance, though it cannot strictly be called *knowledge* of the material world, is quite sufficient for all the purposes of Science and of daily life. With regard to matters of fact, it is a mistake to expect demonstration, and the only matters of fact which are *intuitively* known are facts about the sense-given qualities and relations of sense-data, and possibly some facts about ourselves. Thus perceptual assurance is the very best that can be intelligibly asked for. We may add that there are many cases where we carry the further-specification series a certain distance, but not far enough to give us this assurance. In such cases we reach an intermediate state lying between mere acceptance and adequate assurance, and this may be called *perceptual confidence*. This is our ordinary state in daily life with regard to the existence and the character of most material things.

The position maintained in this chapter with regard to the nature and the validity of perceptual consciousness is in essence identical with that maintained by Reid against Hume.¹ But Reid did not carry his analysis of perceptual consciousness far enough, and failed to distinguish clearly between *acceptance* and *assurance*. And he seems to have supposed that the distinction between sensory and perceptual consciousness, which he was the first to emphasize, somehow entailed the falsity of Phenomenalism: not seeing that the analysis of consciousness is one thing, and the analysis of material thinghood is another.

¹ Cf. *Inquiry into the Human Mind*, and *Essays on the Intellectual Powers*, especially Essay 2.

CHAPTER VIII

THE RELATION OF SENSE-DATA TO ONE ANOTHER

IT is time to return to the other main subject of our inquiry, the relation of *belonging to*. We saw that there are two main senses of the phrase 'to perceive a table'. In one sense it means 'to have perceptual consciousness of a table' (whether acceptance, confidence or assurance). This sense we have now dealt with. But in the other sense 'A perceives a table' means 'a table is in fact present to A's senses whether he has any consciousness of the table or not'; and this again is equivalent to saying that he is sensing a sense-datum which in fact belongs to the table. Of course if he does have any sort of valid perceptual consciousness of the table, whether acceptance or confidence or assurance, he must also be sensing sense-data which in fact belong to it: for without sensing there are no perceptual acts. But he might sense them and yet have no perceptual consciousness of it, as when one fails to notice things seen 'out of the tail of one's eye', or overlooks what is under one's nose. On the other hand, there is no reason to think that the sense-datum belongs to the thing in the absence of *sensing*. For there is no reason to think that sense-data exist except on occasions when they are also sensed; since although independent of sensing, they do seem to be dependent on other processes which accompany it. (Whether they can exist apart from the *potentiality* of perceptual consciousness, whether *s* which I sense could exist and belong to *M* unless I were at least *capable* of having perceptual consciousness of *M* by means of it, is another question. But at any rate the potentiality need not be actualized.)

Now Naïve Realism, we saw, holds that in the case of visual and tactual data belonging to means 'being part of the surface of'. This we found to be untenable. The Causal Theory, on the other hand, held that in the case of any sense-datum whatever it only means 'being differentially conditioned by'. We can now see that this, too, is false. Its falsity does not indeed absolutely follow from the falsity of the other part of the

Causal Theory, that which identifies perceptual consciousness with causal inference. For when a certain material thing *M* is present to my senses, my sense-datum *s* may in fact be causally dependent on *M*, though my consciousness of *M* (if I have it) is not reached by a causal inference. But now that we have seen how it actually *is* reached, I think we can also see that this relation of causal dependence is *different* from the relation of belonging to, though very likely they always go together. This really follows from the nature of the further-specification process described in the last chapter. That *s* belongs to *M* was part of what we took for granted in our initial act of acceptance. We took for granted the existence of a *particular* material thing, not of any material thing you please. It was designated as the particular material thing to which *s* belongs; in virtue of its assumed relation to a particular sense-datum it was '*this thing here*', and not some other. Accordingly, that *s* really *did* belong to a certain thing *M* is part of what we are assured of at the end of the confirmation process: it is part of what is confirmed. But we manage to become assured of this without ever thinking of any *causal* relation between *s* and *M* at all. We need not so much as conceive of the possibility that sense-data stand in causal relations to anything. Otherwise indeed most men and presumably all animals (who never have conceived of it) would lack even perceptual confidence, and would be quite incapable of distinguishing the illusory from the real: which plainly they can perfectly well do.

We do, however, need to be aware of certain (non-causal) relations between *s* and *other sense-data*. To be assured or even confident that *s* belongs to *M* we do have to be assured, or confident, that it is a member of a certain sort of *group* of sense-data. And we may remember that Phenomenalism actually identifies these two propositions. It says that *M* just is the group of all the sense-data which are thus related to *s*, and that 'belonging to' simply means being a member of such a group. Clearly it is well worth while to examine the nature of these relations between sense-data. They may easily throw important light upon the relation of belonging to, though causal dependence has nothing to do with it.

Here there are two preliminary considerations to bear in mind: (1) It is possible that 'belonging to' has several different *species*, corresponding to the different species of sense-data. A colour-expanse may belong to a thing in one way,

a sound in another, a smell in a third. Or again all the sense-data which have the quality of shape (i.e. the visual and tactual ones) might belong to it in one way, and all the others, which lack that quality, in some different way. It certainly seems reasonable to say that a thing is present to our senses in one way when seen or touched, and in quite another when smelt or heard. It also seems possible that the second way is somehow subordinate to the first, and cannot be defined without reference to it.

(2) The primary relation might be, so to speak, a collective one holding between a *group* of sense-data and a material thing. The relation between an *individual* sense-datum and a thing might have to be defined by reference to this one: perhaps *s* only belongs to *M* because it is a member of a group which collectively possesses this other relation to *M*. (Obviously these two suggestions could be combined; there might be several species of belonging to, and all might be collective relations.)

THE CLASS THEORY

We may now proceed with our examination. And first, it may be thought that all the sense-data which belong to one thing have to each other the relation of *resemblance*, and that the group which they form is just a *class*. But on the face of it, this cannot be quite right. A sound could not be similar to a colour-expanse, nor that to a smell—except in virtue of the fact that all alike may belong to the same thing, which is the very fact to be analysed. It might, however, be said that all the sounds which belong to a certain thing form one class, all the colour-expanses which belong to it form another, all the smells another, and so on. If so, the thing will have related to it not one class but a group of classes. The relation of these classes to each other (as distinct from the relation of the members within each) might or might not be relevant to the discussion of 'belonging to'. But that is a further point. For the moment we need only consider whether there are such classes at all. And we will begin by confining our attention to visual and tactual data. If the theory is successful with them, we can then see what it has to say about the others: if not, there is no point in pressing it further.¹

Now at first sight it does seem plausible to say that visual

¹ In the criticism of the Class Theory which follows, I am more than usually indebted to Professor G. E. Moore.

data belonging to the same thing resemble one another in some way. But in what way? Not necessarily in colour. The front of the thing might be painted black and the back white, the North side red and the South side green, and so on. And even if it were 'really' of the same colour all over, I might put on red spectacles while I looked at one part and take them off again when I looked at another. Indeed we may say that all the sense-data of the thing *cannot* be alike in colour. For whatever the colour of the 'near' sense-data may be, the 'very distant' ones are always purplish, and after all, they belong to the thing just as much as the others.

Then is it resemblance in shape? Hardly. When we look at a tobacco tin from above the sense-datum is more or less circular. When we look from the side and from a considerable distance our sense-datum is more or less rectangular. These two shapes are about as unlike as they could be. And even the back of a man's head does not really look very like his face.

Even if we confine ourselves to only one surface of the thing, we are not much better off. There are the perspective distortions, to begin with. Although the milder ones may differ very little from the 'normal' or 'head-on' view, the more oblique ones differ a good deal: thus in the case of a penny, a very thin ellipse is not at all like a circle. And there are also the non-perspectival distortions. The shapes which we sense when we look through uneven glass or hot air can be very odd indeed, but they are all members of the group which specifies the top surface of the penny.

Obviously we should not do any better if we considered *size*, or *position* in the field of view. And if we turn to tactual data, it is true that they are not so subject to distortion (though not entirely exempt from it), but there is still the difference between front, back and sides, both in respect of shape and in respect of secondary qualities such as hardness and roughness.¹

It may of course be said that resemblance admits of degrees. And no doubt it does. But we must then point out that sense-data which do *not* belong to the same thing often resemble each other much more closely than sense-data which do. Thus the front view of one house often resembles the front view of the next house very closely indeed, whereas it resembles the side view of the same house very slightly, or not at all. Again, if we took all the top views of all the pennies in the world, they would form a much 'better' class than the collection of

¹ Cf the story of the blind men and the elephant.

all the views of the same penny. And the same considerations apply to touch also.

We can only conclude that the Class Theory as it stands is quite untenable. There is no one respect in which all the sense-data belonging to the same thing always resemble each other, even if we confine ourselves to data of the same sense; and whatever resemblance is suggested holds equally between sense-data of different things.

THE GRADUAL TRANSITION THEORY

But it is possible to suggest a modification of the theory, which may do better. Let us begin by distinguishing between *direct* and *indirect* resemblance. A directly resembles B when they have some characteristic in common. A indirectly resembles B in a certain respect when A directly resembles X in that respect and X directly resembles B in that respect; and in principle there might be as many intermediate terms between A and B as we pleased. It is obvious that indirect resemblance is quite compatible with *direct* non-resemblance: for instance, in the spectrum, red indirectly resembles green, but there is no direct resemblance between them, but rather unlikeness. The relation of indirect resemblance generates a group of a special sort, which, however, is not a class but a series. We may call it a *Gradual Transition* series. Now the suggestion is that all the visual data belonging to the same thing constitute a gradual transition series (in respect of colour, shape, size, and position in the field of view), and that the other kinds of data may be ordered in the same way. This modification of the Class Theory may be called the Gradual Transition Theory.

Now this theory is very plausible. When we walk round a thing and sense a number of visual data belonging to it, there certainly is a gradual transition in respect of shape. The shape which we sense from the West side is probably not at all like the one we sensed from the North side. But they do indirectly resemble each other, *via* the intermediate shapes which we sensed on the way in between. So, too, if we looked underneath or inside. The shape with which we end is probably quite unlike the one with which we began, but there would always be a series of intermediate views leading us gradually from the one sort of shape to the other. And the same is true of size and position in the field of view.

Moreover, the theory will apply to colour as well. Suppose

the North side of a cube is painted white and the West side black. We start with a wholly white sense-datum: when we look from just West of North we sense a white expanse with just a suspicion of black along one edge; and as we move round, we sense more and more black and less and less white, till we end up with a sense-datum which is entirely black. And there could be an analogous transition in touch from a wholly sticky sense-datum to a wholly smooth one, or from a hard one to a soft.

Not only so: the theory applies also to the *distorted* or illusory shapes and enables us to put even them into the group. It has no difficulty in admitting, as any tenable theory must, that even in illusions (not of course in hallucination) the thing is still present to our senses—that however odd the sense-datum may be, it still does belong to the thing. For there is a gradual transition possible from the abnormal view to a normal or perspective view of the thing, and from that to any other perspective view of it.

But there is a still more attractive feature of the theory, which it will be worth while to dwell upon at some length. This is that it will apply to abnormal *secondary* qualities. Let us take the instance of *colour*, and let us consider the odd colours which things appear to have when we put on red spectacles,¹ or take santonin, or again when we look at things from unusually great distances or in odd atmospheric conditions. We notice at once that there is a gradual transition possible from these oddly coloured sense-data to the ordinary ones, as we gradually reduce the redness of the glasses, or the amount of the drug, or the distance. Thus we are able to find an *order* among the various colours which the thing appears to have in various conditions, that is, among the variously coloured sense-data which belong to it. They form a system of a peculiar sort. And we may notice that the order has nothing whatever to do with causality. It is an 'immanent' order among the sense-data themselves.

Now this enables us to find a good meaning for the common-sense statement that blue (for instance) is 'the real' colour of the thing, though it 'appears' to have various other colours in various circumstances, e.g. by electric light or when we have jaundice. Philosophers have made great fun of such statements as this. The few who bother to analyse them at all

¹ The meaning of the phrase 'red spectacles' is explained below, p. 210.

generally offer a causal theory of some sort : to say, for instance, that the curtain is really blue only means (they think) that the curtain causes blue sense-data in normal conditions of illumination and in presence of a normal eye—and others in other conditions. But whatever we do mean when we say that so and so is the thing's real colour, it certainly is not this ; it is perfectly obvious, if we examine our own minds, that we do not mean anything causal at all. And quite unsophisticated people, who have never been told that sense-data are causally dependent on the thing they belong to, are quite prepared to say what the thing's 'real' colour is : the real colour of the curtain, they say, is blue, though of course it looks purple now. Of course this may be an absurd thing to say, but at least we should try to give the right analysis of what is said. But if it is absurd, assuredly what the philosophers say is no less so, besides being no analysis of it : for what do they mean by 'normal' illumination and a 'normal' eye ? What meaning is there in these expressions unless we already know, antecedently to all causal considerations, that there is some one colour which is in some sense *the* colour or the *right* colour ? Where there is normality, there must be some standard by reference to which it is determined. 'A normal eye' can itself only be defined as one by which the real colour is revealed : so, too, with 'normal illumination'.

But the key to the difficulty is surely this : there are *many* series of gradually increasing oddness, which have the *same* colour for their common origin, and, so to speak, diverge from it in different directions. Let us consider the curtain which is said to be 'really' blue. And let us first put on a pair of red spectacles : by this is meant spectacles such that whatever the sense-datum we were sensing before, it is replaced by a more reddish one. Having got our more reddish sense-datum, we take off the spectacles and put on another and 'redder' pair, and our new sense-datum is still more reddish in colour. And so we go on, replacing our original sense-datum by more and more reddish ones : the limit to which the series approaches (but never reaches) being a pure red sense-datum with no admixture of any other colour. We can then start again with green spectacles and proceed as before ; now we get a series of more and more greenish sense-data tending to pure green as its limit. In the same way we can obtain other series tending to other limits. But all these series start from the *same* colour, namely blue : or if we go in the reverse direction (away from

the limits), blue is the colour upon which they all *converge*. Blue is, as it were, the common theme, and they are the different sorts of variations which may be made upon it, each series of variations being ordered in degrees of increasing oddness. And if instead of putting on spectacles we progressively alter the illumination in various ways, or take various drugs in increasing doses, we get another group of progressively increasing variations. And here, too, blue is the common theme.

Thus although all these different colours are alike in being sensed, and hence are all equally actual, blue does enjoy a peculiar and, as it were, privileged position among them. It is not enough to say 'All these colours are equally real or equally unreal, equally "right" or equally "wrong"'. Quite so. But what is the structure of this 'all'? When we reflect upon that, we find that it is not a mere aggregate, like a heap of stones, but a *system* of a peculiar sort: it is an ordered group of variously increasing divergencies, having a certain single quality for its centre.

This is the fact that common sense is trying to state when it says that blue is the real colour of the curtain. But the statement is infelicitous, owing to the ambiguity of the term 'real'. It is apt to suggest that the blueness is actual and the other colours (say the purple sensed by the man with red spectacles) are not actual: which is plainly not the case, for all of them are actually given. But this is a misinterpretation. The meaning of 'real' here is more like the one it bears in such statements as 'The real way to do it is this' or 'The real authority on the subject is Smith'; it means something like 'superior to others of the same kind'. Now there is a very good sense in which the colour blue is superior to, and more important than, the many other colours which are also exemplified when we look at the curtain. They are no less actual than it, but the fact remains that in this case of the curtain it is the one by reference to which alone all the others are ordered; were it not for their common relation to it, the group would fall to pieces, and would not be the sort of ordered group that it is. And it is more important than the rest not only ontologically but also epistemically: it is, so to speak, the key to the group, and if we know what it is, we can infer what the other members must be. Let us sum all this up by calling it the *standard colour* of the curtain, thus avoiding the ambiguity of the word 'real'. What common sense maintains then, is that blue is the standard colour of that particular curtain, and moreover,

that any material thing has its own standard colour. If so, it is clear that common sense is perfectly right. And we may observe that neither the analysis nor the justification of its statement require any appeal to causal considerations at any point.

We must, however, remember that 'standard' is a relative term. A standard is a standard *to* certain divergencies, just as they are divergencies *from* it, and without them or at least the possibility of them it would not be a standard at all. Thus when we say that the curtain is blue, we do not mean that no visual sense-data belong to it except blue ones. We mean that sense-data of all sorts of colours belong to it, but that blue is the standard among these colours. When a colour-adjective is applied to a material thing such as a curtain, it really stands for a *complex* of colours ordered in a certain way; and there is no limit to the number of colours composing this complex. But as it is an ordered complex, and we are able to discover what its order is, this does not matter. Moreover (what is still more surprising), things of *different* colours may have sense-data of the *same* colour belonging to them. This thing, we say, is blue, that one is red: none the less each will have many purple sense-data belonging to it. The two complexes of colours resemble each other in respect of many of their members; but as they are differently organized and have different standard qualities for their 'centres', they are signified by different adjectives—the one thing is said to be blue, the other to be red.

It is obvious from these considerations that such an adjective as 'blue' is used with two distinct meanings. When applied to single sense-data it has a simple and not further analysable meaning: the quality for the possession of which it stands may be called *sensible* blueness. But when we say that a material thing is blue we mean something much more complicated, which is indeed defined by reference to sensible blueness, but is not reducible to it: we mean that there are various visual sense-data belonging to the thing which have *various* sensible colours, and that among these sensible colours which they have blue is the standard one. No doubt it is unfortunate that we should use the word 'blue' in these two quite different ways; but I am afraid it is obvious that we do. And after all there are many other cases where a complex is referred to under the name of its most important member. We say, for instance, that Attila invaded Gaul, but what we mean is that an army of Huns of which he was the leader invaded Gaul.

Of course if common sense holds that the standard colour

exists unsensed, there is no reason to believe it : still less can we believe that it exists unsensed whereas the others (the variations) do not. There is no reason to think that any of them exist unsensed. But I do not believe that common sense thinks that they do. That is not the sort of question which interests it ; provided we can sense the coloured sense-data when we please, it is quite satisfied. And whenever we do sense them, there will be this standard colour standing in a peculiar relation to all the rest. Not only so ; if *any* of them are sensed the standard colour stands in this relation to them, even though it itself does not happen to be sensed : for instance, if all the people who ever looked at the curtain had worn coloured spectacles or suffered from jaundice, the curtain would still have been blue, though none of them sensed a blue sense-datum in looking at it. For it is still true that blue data would be sensed if we removed the spectacles or the jaundice. And the quality ' blueness ' which they would have, though not actually exemplified, does stand in this peculiar relation to the other qualities (varying shades of purple, of brown, etc.) which *are* actually exemplified—namely, in the relation of being the standard from which they variously deviate.

We may try to illustrate this by a rather far-fetched analogy. The ' proper ' salute for a certain potentate is, say, nine guns. But in the first place this does not imply that he is being saluted every day with nine guns, and all day long. And secondly, if every one who does salute him always fires the wrong number of guns, it still remains true that nine guns is the proper or standard number for that particular potentate. So, too, blue, for instance, is still the standard colour of the thing even at moments when no colour is being sensed : and it is still the standard colour even if only the non-standard colours are sensed on some particular occasion, or even on all the occasions when any are sensed at all.

' But is the thing *really* blue ? ' someone may ask. Of course it is. When we say it is blue, we mean something about all the visual sense-data belonging to it : what, we have just explained. But perhaps the questioner really means ' Is it *the thing* which is blue : is it not just the sense-data ? ' This really amounts to asking how intimate the relation of ' belonging to ' is ; and the questioner is really assuming that the relation is *extrinsic* to the thing, in the sense that if a thing had no sense-data belonging to it, it would not be in any important respect different. This question we cannot yet discuss. But we shall try to show later

that unless sense-data thus related to it are at least obtainable, there is no thing at all, in any intelligible sense of the word. To call a thing coloured 'only' means (if you will) that it has belonging to it a group of visual sense-data actual and obtainable among whose colours A is the standard colour: but that it does have them belonging to it is a genuine fact about it (quite as genuine as the fact that it has certain causal characteristics and occupies a certain place) and by no means an unimportant one. It is only the Causal Theory which 'bifurcates Nature'¹ into sense-data on the one side and things on the other, and regards the sense-data as unimportant additions. But that is just the secret of its weakness.

Similar considerations will apply to abnormal tactual qualities, and what is more, to the non-extended sense-data of hearing, smell and taste. Let us consider, for instance, the sound of a whistling railway engine in rapid motion.² Here the auditory data of the different observers differ according as they are stationary, or moving with the engine, or moving in some other way. If the engine is approaching the sense-datum manifests a rising pitch, if it is moving away, a falling one; and if I am on the footplate, the pitch is constant. There are also differences in loudness, and no doubt physiological disorders lead to others still. But all the auditory data, different as they are, form a group, united by the relation of indirect resemblance. This group is *the sound* of the engine on that particular occasion. And the group has a standard member from which all the others diverge in various ways, namely, the one sensed by the engine-driver. (Hence common sense says that he hears 'the real' sound.)

Even the case of *taste*, which may seem the most difficult of all, can be dealt with in this way. If I eat an orange after a lump of sugar I get a sour taste, if after a lemon, a very sweet one; if I had just eaten peppermint or camphor or had a bad cold, in each case the taste would have been different. But although all the taste-data differ, they are none the less ordered in gradual-transition series by the relation of indirect resemblance. And here again there is some one standard taste to which we approximate as the amount of camphor or sugar or lemon previously eaten is diminished. This *standard* taste-quality, characteristic of that particular orange, is called by

¹ The phrase of course is Professor A. N. Whitehead's. Cf. *The Concept of Nature*

² Cf. Professor Alexander's *Space, Time and Destiny*, vol. 2, pp. 191-2.

common sense 'the real' taste of the orange, to the great scandal of philosophers: the orange, it holds, is really just a little sour, though on some occasions it appears very sour indeed, and on others quite sweet. But as before with colour-adjectives, so here, the adjective 'slightly sour' has two distinct meanings. When applied to an individual datum of taste it signifies a simple and indefinable taste-quality. When applied to a material thing, such as an orange, it signifies a *complex* of taste-qualities, slight sourness being the one by relation to which the others are ordered, and from which they diverge in various degrees and manners. This whole complex thus ordered is what we mean by 'the taste of the orange'. And the fact that this particular complex of taste-qualities belongs to it is just as characteristic of it as its mass or its spherical shape: not less so while it remains uneaten, than when someone is actually eating it, and not less so because all the people who partake of it happen to have bad colds or have been sucking lemons for the previous half-hour.

So much by way of exposition of the Gradual Transition Theory. We must now turn to criticism. And first it is obvious that the theory has a great deal of truth in it, and is a great advance upon the Class Theory, still more upon the Causal Theory. For all the various sense-data which belong to a certain thing really are ordered in a set of gradual transition groups (one for each of our senses) and the members of each group really are related to one another by the relation of indirect resemblance. And so far as *non-spatial* characteristics of sense-data are concerned, it seems to me that the theory is perfectly right: in respect of them, its doctrine of gradual transition series diverging from standard qualities, and its account of what we mean by 'the colour of a thing', 'the taste of it' and so on, seems to be the last word. But when we turn to shape, size, and position, we find that the theory is not explicit enough; as the following examples will show:

Suppose there are five tables in different parts of the world, which are indistinguishably alike in shape and size. It is true that the sense-data of any one table would form a gradual-transition group in respect of shape and size. But unfortunately we could also make up a gradual-transition group by selecting some sense-data from table No. 1, some from No. 2, others from No. 3, and so on. Any one member of this group would directly or indirectly resemble any other: yet though

every member of the group (by hypothesis) belongs to a material thing, the whole group does not belong to anything. Again, if I cast my eye along a row of buildings, there is a gradual-transition series. First I sense a square shape, then a square with a bit of a rectangle added, then a rectangle with a bit of a square, then a rectangle alone : and so on, along the whole row. Any one of these data is related to any other by direct or indirect resemblance. But obviously the whole set does not belong to any one thing. And we may even combine the two instances. Somewhere in the other hemisphere there may be an exact copy of Broad Street, Oxford. Let us collect together before our minds all the visual data sensed in walking down both streets. Then we could form a gradual-transition series, by taking some sense-data belonging to things in the one street and some belonging to things in the other : and though every member of this series would belong to some material thing, the whole would not belong to anything. (Photographs and cinematograph films would obviously provide plenty of other instances.)

Plainly the difficulty is that the gradual transition and the resemblance which the theory speaks of are purely *qualitative* ; and this, though necessary, is not sufficient to ensure that all the data so ordered belong to the same thing. It is plain that the shapes must be related not only *geometrically* but also *locally*. To put it roughly, they must all be in the same region of space. This requirement is apt to escape recognition owing to a certain vagueness in the phrase 'gradual transition'. For this can be used to cover two types of transition at once : (a) a purely qualitative one, from one shape to another *resembling* it, and thence to a third resembling that ; and (b) a spatial or positional one, from one surface to an *adjoining* surface and thence to a third adjoining that. In the course of the further-specification series by which we establish the existence of a material thing, these two transitions are present together : both a qualitative series and a positional series gradually unroll themselves before the mind, and naturally enough we fail to distinguish them. But really they are quite different, nor do they invariably go together, as was shown the instances just now mentioned. A group of visual or tactual sense-data belonging to the same thing must display *both* kinds of transition. In the case of colour, sound, smell, hardness and the like, the transition really is purely qualitative : therefore the theory succeeds perfectly with them. Nevertheless,

it is only because they are connected with *extended* sense-data that we can be sure that a group of sounds or colours or tastes belong to the *same* thing, and not to a number of similar things.

In the case of colour, the mode of connexion is obvious, though not further analysable. Colour, shape and position are sensibly manifested together in every visual datum. And the like applies to hardness, stickiness, coldness, etc., in the case of touch; and to taste-qualities too, which are manifested in union with tactual ones.

But what of sounds and smells? In their case I think we have to go upon concomitant variation with visual and tactual data. The sound or smell grows more intense as certain visual data grow larger and more stereoscopic, and when they reach a maximum in these respects, it reaches a maximum too: also it varies with certain variations in tactual data. And because the visual and tactual data belong to a certain thing, the sound or smell (varying thus with them) belongs to that thing too. It is only this concomitance with visual and tactual data which 'ties down' the group of auditory or olfactory data: apart from this, such groups would not belong to a thing at all. That is why we hinted above that there might be more than one way of 'belonging to' a thing, and that one might be more fundamental than another. For clearly the visual and tactual sort of belonging is primary; and the auditory and olfactive sort, though no less genuine, cannot be defined except in terms of it.

We must now proceed to investigate this positional or local relation holding between visual sense-data belonging to the same thing (and likewise between tactual ones) since this has turned out to be the most important of the relations they have to each other, and is therefore likely to throw most light on the relation of belonging to. For this purpose we must introduce a new notion, that of *spatial synthesis*.

SPATIAL SYNTHESIS

Let us, then, consider all the expanded sense-data belonging to some single thing during a certain period. Let us begin with the visual ones. We will suppose for simplicity's sake that the thing does not change during the period in question; and we will ignore for the moment the temporal relations between the sense-data.

Here, then, is a vast collection of visual sense-data differing from each other in their shapes, their sizes and their spatial

relations to other sense-data given along with them. Can we say anything more about them, except just that they all belong to the same thing and all directly or indirectly resemble each other? It seems to me that we can, and that they form a system of a peculiar type, which may be called a *family* of sense-data.

In the first place, we find within this collection a certain small group which has a remarkable property. This property is that all the members of it *fit together to form a single solid*,¹ i.e. that taken together they form a closed three-dimensional surface, totally enclosing a certain region. Let us call the sense-data which belong to such groups *constructible* or *spatially synthesizable* sense-data.

There are two types of constructible sense-data, corresponding to two types of stereoscopic vision.

It is obvious that all visual sense-data have the characteristic of *depth* or 'outness'. This characteristic of them is just as much 'given' as colour or shape, whether we can explain it or not.² And there is another characteristic connected with this, which we may call that of *sensibly facing in a certain direction*. (It is clear that the direction in which a whole sensibly faces depends upon the respective depths of its several parts.) This, too, is given. In virtue of these characteristics we may divide the entire field of view into a *stereoscopic* part and a *flat* part. The flat part contains those data all of which, and all parts of which, are at the maximum depth in that field: i.e. there is nothing in the field which is wholly or partially at a greater depth than any of them. It follows that they all face the same way, viz. 'directly forwards'. The stereoscopic part contains all those data which are wholly or partially at a smaller depth than the maximum. It follows that they may face in sensibly different directions, though they need not.

It is obvious that there are infinitely many degrees of stereoscopy ranging all the way from the 'quite solid' to the 'just not flat'. Within these we may distinguish three main types. First there is complete or perfect stereoscopy, in which the size and shape of the datum are independent of the direction in which it sensibly faces. Thus if I look at a match-box on the table just in front of me, two or even three surfaces of

¹ I mean by 'solid' a complete three-dimensional figure. I do not mean solid as opposed to 'hollow' or to 'soft'.

² It seems to me *no more* in need of explanation than colour or shape—and no more likely to get it.

it are present to my senses at once. I am acquainted with two (or three) sense-data belonging to it, which face in sensibly different directions ; but in spite of this they are all sensibly rectangular. Very likely the corresponding retinal images are not rectangular ; and certainly if we draw a picture of our field of view on a flat piece of paper, we shall have to draw shapes which are not rectangular. But the sense-data themselves are not drawn on paper, and they are not retinal images. And that in such a case as this they are sensibly rectangular is just a fact, however shocking it may be to some theorists. Moreover, they retain the same size and the same rectangular shape even if the match-box is turned round a little ; for instance, the end of it still looks rectangular whether I look at it ' head on ' or sideways.

This first and perfect stereoscopy only occurs within a small range of depths ; the thing to which the sense-data ' belong ' must be, as we say, neither too far away nor too near (the upper limit is probably only a few feet, the lower some six inches). However, it is of great importance. For perfectly stereoscopic sense-data are the only visual ones which are perfectly constructible. Given any perfectly stereoscopic datum belonging to a certain thing, we can always find others such that they join up with it to form a single and complete three-dimensional continuum, i.e. a complete solid.

In the other types of stereoscopy, the shape and size of the sense-datum are not independent of the direction in which it sensibly faces. But in the second type we still get a solid of a sort. For instance, if I look edgewise at the square tower across the quadrangle, I still sense two sense-data belonging to it, and they face in sensibly different directions. They by no means form one single flat expanse, as they would if I were two miles away. Moreover, this difference of sensible direction is such that if I walked all round the tower at that range, I should get a series of data which would still synthesize into one single solid. But they would not do it without overlapping. The ' head on ' views are still rectangular, but the oblique views are distorted and shrunk : whereas if I had been within the range of perfect stereoscopy, there would have been no distortion, nor shrinkage, and consequently no overlapping ; there would just have been one single continuum of adjoined colour-expanses.

The limits of this second type of stereoscopy cannot be definitely laid down. They vary for different objects and under different conditions of illumination ; the presence of strong

shadows being specially favourable. In general this type of stereoscopic vision has what we may call a 'percepturient' character, that is, it depends to a large extent on our perceptual expectations. The more familiar the object, the greater the distance from which this sort of stereoscopic vision is possible.

If now we consider all those constructible sense-data of the object which fall into this second or 'imperfect' class, it is plain that they constitute a *series* of imperfect solids of different sizes, fitting inside each other like Chinese boxes; for in this class the size of the sense-datum varies as we move about.

Is this also true of the perfectly constructible ones? The question is a puzzling one, but I think that so long as we neglect stereoscopic microscopes and stereoscopic magnifying glasses (if there are any), the answer is clearly No. It seems to me that within the zone of perfect stereoscopy there is no increase of sensible size with decrease of depth, but only increase of detail. It will follow that all the sense-data of this zone (that is, of course, all those which belong to the same thing) constitute only one solid, not a series; each surface of this solid will consist of a set of sense-data which are approximately coincident with one another. It is true that the coincidence is not absolutely complete, for there are within this zone sense-data of different depths, and the less deep a sense-datum is (up to the inner limit of this zone¹) the more detail it displays. Thus the 'less deep' ones are slightly more complex and variegated in their shapes than the 'more deep' ones, e.g. they have more wavy edges and more numerous and more marked protuberances. But the *general* shape is the same—in the case of the top surface of the match-box, for instance, all are approximately rectangular—and so is the average length, depth, and height. Also there is a continuous series in respect of amount of detail ranging from the most wavy datum at the smallest depth within the zone to the (for instance) all but straight-sided one at the largest. We must remember too that the whole zone is in any case quite small, so that there is no room for any very great difference in respect of amount of detail. No perfectly stereoscopic sense-datum has the frankly 'impressionistic' and 'schematic' character which sense-data at a really large depth display (for instance, a view of a tree a mile away). Thus we are perfectly justified in saying that all those perfectly stereo-

¹ At smaller depths still—when the thing is 'right up against our eye'—there is *decrease* of detail again.

stereoscopic sense-data are *approximately* coincident ; the amount of overlap will be very small in comparison with the total area.

This coincidence only appears paradoxical because we assume that sensible size *always* varies with depth on the ground that it usually does. But this assumption is simply false. Even outside the range of stereoscopic vision the correlation between decrease of size and increase of depth is by no means complete. A distant thing looks smaller and smaller as we increase the *physical distance* between ourselves and it. But beyond a certain point, although the decrease of sensible size still continues, there is no further increase of *sensible depth*. In fact there seems to be a certain maximum depth beyond which a visual sense-datum cannot go ; probably there is also a certain minimum sensible size which it must exceed, if it is to exist at all. Now if the material thing which is present to my senses is a large one, e.g. a cloud or a mountain, the sense-datum reaches the maximum of depth long before it reaches the minimum of size ; and in certain lights this happens even with quite small objects.

And if we come *inside* the zone of perfect stereoscopic vision (a region too little explored by philosophers) we find that there is indeed a correlation between depth and sensible size, but it is the other way about ; the smaller the depth, the *smaller* the size. Thus if I bring a match-box up to the end of my nose, the top surface is manifested by a trapeziform expanse having its longer side at a greater depth than its shorter one : the box has rather the appearance of a wedge, whose ' thin end ' is directed towards me. And if I hold the box an inch or two from my nose I can actually see four surfaces of it at once. Accordingly, an intermediate region where size neither increases nor decreases with depth is exactly what we should expect to find.¹

In the third and lowest type of stereoscopic vision the sense-data in any one field of view still face in sensibly different directions, but the directions differ so little that spatial synthesis is no longer possible at all. Thus if I walk round a mountain at four miles' distance I still sense a number of slightly ' bulgy ' sense-data, which form a gradual transition series of the sort described on page 208 above. And the transition is not merely qualitative ; it is temporal as well. The

¹ The physiological explanation, of course, is that we have two eyes at some distance apart and capable of convergence ; but it does not matter to us what the explanation is, or whether there is any. At present we are only concerned to describe the actual sense-given facts.

closer together any two members of the series are in time, the more closely they resemble each other. Nevertheless, the series does not form any sort of *spatial* whole. All we can say is, first, that it suggests a certain solid to the mind, without being one. Every member of the series more or less closely resembles a sense-datum which is synthesizable, but it is not synthesizable itself; and the greater the degree of stereoscopy, the greater this resemblance. Secondly, the points of view¹ from which the series of sense-data are sensed do form a continuous track in space.

We are now in a position to give a systematic description of the entire collection of visual sense-data belonging to the same thing. Clearly we must begin with the perfectly constructible and perfectly stereoscopic ones. These collectively constitute one single solid, as we have seen. Let us call this the *nuclear solid*; and let us call them the *nuclear members* of the collection. By reference to them we can order the imperfectly constructible data. The solids constituted by these can be arranged either in order of size, beginning with the one which is just smaller than a nuclear solid: or in order of imperfection, beginning with the one which is just not perfectly constructible, i.e. in which there is the minimum of 'foreshortening'. These orders will be in opposite directions. The nearer one stands to the thing, the larger the sense-datum, until one reaches the stereoscopic zone. Conversely, the nearer one stands to an object the more foreshortening there is, if there is any at all,² i.e. once one has left the stereoscopic zone—and the farther, the less. (There is, of course, no contradiction in this: for the two orders are generated by two different relations, and both relations do actually subsist between these solids.)

But what is to be done with the non-constructible members in the collection? The simplest thing will be to arrange them in respect of their *shapes*. They can be divided up into series in such a way that each series will have a just constructible sense-datum as its limit, and the members will be ranged in respect of *increasing distortedness*. The series can then be continued through the less and less imperfectly constructible sense-data, until finally we reach a nuclear sense-datum.

A distortion series of this form (nuclear datum, imperfectly constructible data in order of imperfection, non-constructible data in order of imperfection) may be called a *perspectival* distortion series.

¹ On points of view cf pp 252-260, below.

² A door seen obliquely is an excellent example of this.

We must now find room for other and odder sorts of distortion besides the perspectival sort. We have already seen how to do this in discussing the Gradual Transition theory. Let us consider once more the distortion caused by uneven glass in a window. This puts a 'kink' into everything seen through the glass, i.e. makes the sense-datum kinked. Now we can substitute for this a pane of slightly less uneven glass: i.e. one which gives us a slightly less kinked sense-datum. And we can reduce the unevenness of the glass, and the kinkedness of the sense-datum, until in the limit we arrive at a sense-datum which belongs to one of the series already described, and from it we can proceed along to a perfect or nuclear sense-datum.

In all such cases we find that the series of abnormal distortions (caused by the introduction of some new physical or physiological condition) branches off, as it were, from an ordinary perspectival distortion-series at some point, i.e. has one of the members of that for its limit.

THE PRINCIPLE OF MAXIMUM SPECIFIC DETAIL

There is, however, another and very important characteristic by reference to which all the sense-data belonging to the same thing may be ordered. We have already mentioned it more than once. It is expressed in ordinary speech by such words as 'good', 'well', 'better', 'worse'. We think that if you come close to a thing you get a *good* view of it, or see it *better*; that on a foggy day there is *bad* visibility; that spectacles *improve* our sight, that Jones does not see so *well* as he did, and so on. What is the meaning of these expressions? The obvious suggestion is that a 'good' sense-datum is a relatively *differentiated* one, containing a relatively large amount of detail (i.e. many distinguishable parts or qualities), while a 'bad' sense-datum is a relatively homogeneous or *undifferentiated* one. Thus the very distant view of the tree is a bad one, because the sense-datum is just a homogeneous purplish mass, with a very simple outline. The near view is better, because the sense-datum displays a great multitude of parts differing from each other in shape, position, size and colour, and forming a very complicated 'leafy' pattern. We must not, however, think that nearness is always an 'advantage' (if we may go on using this quasi-ethical language). Thus you do not get a good view of Oxford by standing in the High Street, but by going out some miles into the country or some hundreds

of feet into the air. For unless you are some distance off there are many parts of the town which you simply do not see at all, though there is more detail in the part you do see. The same applies to instruments like microscopes and telescopes. They enable me to see a small part of the thing better, by producing a far more differentiated sense-datum of it than I ordinarily enjoy; but though our view of the part is vastly improved, our view of the *thing* is not, for many or most of its details (including under that head its relations to other things) are no longer present to our senses at all.

There is, however, a difficulty in the notion of 'amount of differentiation' which we must try to clear up. When I see double or look through uneven glass, is not my view more differentiated than usual? I see two sense-data where you see one; or, again, I see a kinked one of complex shape when you see only a homogeneous straight-sided one. Then ought not my view to be called the better one of the two? But of course every one holds that it is the worse.

We can avoid this difficulty by distinguishing between increase of specific detail and increase of non-specific detail. When I look through the uneven glass *everything* that I see through a certain part of the glass gets kinked—whether man or tree or pole, it makes no difference. The change in the sense-datum does not differ in any way from thing to thing, but is imposed equally on all. The same applies to the duplication in double vision: I see two trees where I saw one before, two lamp-posts instead of one, two tutors instead of one. Every sense-datum, whatever object it belongs to, is replaced by a pair. The increase of detail is *non-specific*.

But when we come to see something better than we did before, the increase of detail is *specific to that thing*. If I walk towards the distant tree, I distinguish on it leaves and boughs and twigs where before I saw only a homogeneous mass. And if I walk towards the distant man, I start with a not very different homogeneous mass, and end not with leaves and twigs, but with eyes, nose, and waistcoat-buttons. And if I look through a microscope first at a hair and then at the edge of a knife-blade, in both cases there is great increase of detail, but the new details are vastly different in the two cases.

It is true that there is not *necessarily* this difference between the two sets of new details. If I look at two twins through a telescope, the two ensuing sense-data, though full of fresh detail, *may* be just as much alike as were the two

which I had by the naked eye. Thus if this was all the evidence we had, we could not decide whether this particular increase of detail was an increase of specific detail in the appearance of two exactly similar things, or of non-specific detail in the appearance of two dissimilar things; i.e. whether we were seeing better, or had suddenly caught some odd optical disease. And if we lived in a world all objects in which were exactly alike, we could never settle this kind of question. But fortunately we have plenty of other evidence to show that it is specific detail which is increased by telescopes, so that we can argue by analogy that here too the increase is of that kind.

Our conclusion so far is: of two sense-data belonging to a certain thing, that one is regarded as 'better' which possesses the greater amount of specific detail. We may call this *the Principle of Specific Detail*.

This principle must not of course be taken as a definition of 'better sense-datum', i.e. as stating what we mean when we use that phrase. What we *mean* is clearly 'more effective for a certain purpose', the purpose being the obtaining of perceptual assurance with regard to the existence of the object, or to certain of its characteristics. But we can easily see the connexion between specific detail and effectiveness, if we recall the very intimate relations which there are between sense-data and acts of perceptual consciousness. When one sense-datum displays greater specific detail than another, clearly the perceptual act which it elicits is making determinate what the other perceptual act presented less determinately. (If the new detail had been non-specific, it would have been not determination but simply addition.) Now perceptual assurance is reached by obtaining a series of perceptual acts such that later ones make more determinate up to a certain point what was indeterminately presented in earlier ones; thus the greater the advance in determination which any one act makes, the nearer we are to the goal and the more effective the sense-datum which makes that act possible.

Now the Principle of Specific Detail enables us to order our collection of sense-data in another way. Here, too, the result is a number of series all 'diverging from' the nuclear group. Starting from one of the nuclear sense-data A, we can find a series of others showing progressively less and less specific detail, till at last we reach one which is merely a homogeneous 'dot' or 'spot'. This will be the worst and dimmest view possible of that side of the thing: it will not be

distinguishable from the worst and dimmest possible view of another side of the thing, which we reach in the same way by starting another series from a nuclear sense-datum B which is a constituent of another side of the nuclear solid. But the further we progress up the two series, the greater the difference between them, and A and B themselves will differ most of all.

But are the nuclear sense-data the 'best possible' ones? By the use of an optical instrument such as a microscope we could obviously get still greater amounts of specific detail, and we could increase the amount even further by the use of other instruments. (To say 'by the use of *more powerful* instruments' would of course be tautologous. 'More powerful' just means 'productive of sense-data displaying greater specific detail'.) Thus the nuclear sense-data are not the upper limits of our new group of series as they were of the old. And it is not clear that these new series have any upper limits at all. All we can say is that we can find a place in one or other of them for any new sense-datum that may in future turn up.

Can we find any connexion between this mode of arrangement in respect of specific detail and the other mode of arrangement in terms of shape and distortedness? The Principle of Specific Detail will obviously apply to *all* sense-given characteristics, and therefore to shape among the rest. It might then be hoped that the maximally detailed sense-data of the one arrangement would be identical with the nuclear sense-data of the other. If there were no microscopes and magnifying glasses, this suggestion would be plausible. But thanks to these instruments, it is plain that the nuclear sense-data which are the limits of the various distortion series are very far from being the limits of the differentiation series although they are of course relatively 'good' members of these.

Now if microscopical sense-data¹ had been *constructible*, they would have provided us with a new series of solids, each larger and more differentiated than the one before, and we might have chosen the largest and most differentiated of these as the 'centre' of the entire system, since in it all the different series of both types would eventually terminate. (No

¹ By a microscopical sense-datum we do not of course mean a *small* one, but one sensed by means of a microscope or other such instrument. It belongs, of course, to a physically small part of the object: obviously, however, it is not smaller than an ordinary sense-datum of that but very much larger.

doubt it would be an ideal limit, but we could approximate closer and closer to it.¹) But unfortunately it is not at all clear that any microscopical sense-data are sufficiently stereoscopic to make up such solids, and quite certain that most of them are not.

We can, however, obtain a somewhat similar result as follows. If the microscopical sense-data are not constructible, then they obviously belong to distortion-series, as other non-constructible sense-data do. And each of these series (like the ones previously described) will have one of the nuclear data as its limit. All we have now to do is to take the most differentiated member of the series and, as it were, conflate it in imagination with the nuclear datum which is its limit. That is, we must imagine it keeping all its differentiatedness and losing its distortion, or we may imagine the nuclear datum keeping its constructibility and losing its relatively undifferentiated character; the two alternatives come as far as shape goes to exactly the same thing.² In this way we can imagine the shape of the nuclear solid emended, as it were, until it is as differentiated and therefore as 'good' as possible.

The nuclear solid, so rectified, does serve to unite the whole system, being the common limit both of all the distortion series and of all the differentiation series. We may call it the *Standard Solid* of the whole system, and its shape we may call the *Standard Figure*—'standard' because it is what all the series 'deviate' from in different degrees and different manners. And a collection of sense-data so unified, consisting of a standard solid together with a set of distortion series and a set of differentiation series, we shall call a *Family of Sense-Data*. We observe that those members of the family which compose the Standard Solid constitute (in Dr. Broad's terminology) a 'unity of system', being united merely by their relations to one another; while the other members, the distorted and the less differentiated ones, form a 'unity of centre', being united only by their common relation to the Standard Solid.

The Standard Solid is of great importance in another way, for its shape (the Standard Figure) is identical with what we ordinarily call *the real shape of the thing*, i.e. of that thing to

¹ This does not, of course, imply that the series must be finite: we might still approach the limit asymptotically even if it were not.

² It is true that the most differentiated member is much larger than the nuclear datum, but as we shall see later this sort of size-relation is not important. In any case we are only discussing shape at present.

which all these sense-data belong. And it now turns out that in the course of that mutual confirmation of perceivings and further determination of percepts by each other which leads if successful to perceptual assurance, one of the main things that we are doing is to discover whether the original sense-datum belongs to a family, and if it does, what sort of standard solid the family has. (We must not, however, jump to the conclusion that the Standard Solid is *identical with* the object, nor even that it is *spatially coincident* with the object. These are questions which we are not yet in a position to deal with ; they will be discussed below.)

We can also see what constitutes an hallucinatory sense-datum, and what an illusory one.

An *hallucinatory* sense-datum is one which is completely 'wild', it is taken to be a member of a family, but does not in fact belong to one. An *illusory* sense-datum does belong to a family, but it does not have that place or rank in the family which we perceptually take it to have. For instance, we take it to be a constructible member when it is not, or we take it to be a member of an ordinary perspectival series, when really it is a member of a refraction series branching off from one of these (e.g. it is a mirage). And this leads us to mistake the nature of the standard solid, and therefore to misconceive the shape or size or position of the thing to which the sense-datum belongs.

A *mirror image* is a curious intermediate case. As we have seen, a mirror image is not a single sense-datum, but a group of sense-data all of which are 'reflections of' the same object. Now on the one hand a mirror sense-datum does not belong to any of the ordinary distortion-series, for no gradual transition is possible from it to the standard solid. On the other hand, it is not completely 'wild'. For it is related to *other* mirror sense-data in the same sort of way as ordinary members of the family are related to each other. We find that mirror sense-data are united among themselves to form distortion-series and differentiation-series. But these series are always *unfinished*: there are no nuclear sense-data to serve as their limits. Also there are *not enough* series to form a complete family. Even if the limits did exist, they would not form a solid, for there would be nothing to serve as its back, and probably nothing to serve as its underneath surface. A mirror image, then, is a group of sense-data which *simulate* a family, without *being* one. Dr. Broad calls it an 'incomplete

optical object'; translating from his language to ours, we may call it an 'incomplete family'. And the particular family which a mirror image simulates is the family belonging to that material thing whose 'reflection' that particular mirror image is said to be.

We can now attempt to include sense-data of other senses in our family. Those of touch will cause no difficulty. The tactual sense-data of a single object form a family of their own, made up of various distortion series and differentiation series all related to a single standard solid. This family is much less complicated than the purely visual one which we have just been describing, the distortions are much less, and the differences in respect of differentiation much smaller. (This is one reason why touch is apt to be preferred to sight.) The purely tactual family is united to the purely visual one by having *the same standard figure*. Whether it can be said to have the same standard *solid*, i.e. whether the standard solids of the two families are spatially coincident as well as spatially similar, is a matter to be discussed later.

There is one other curious point to be noted about touch. All normal tactual sense-data belong to two objects at once, viz. to the object which we are touching, and to our own body or some part of it; they accordingly belong also to two families. Even when the thing touched is our own body, this is still true. For the same sense-datum still belongs to two parts of it, viz. the touching part and the part touched.

Sounds, smells, and sense-data of heat and cold are more puzzling. It seems to me that all these display a kind of simultaneous muchness, which one hardly knows whether to describe as 'size' or not; and all have the characteristic of being 'here' or 'there'. But it is quite clear that they do not have shapes, as visual and tactual data do, and therefore they cannot possibly form families of their own in the sense in which we are using that term.

We can, however, include them in the visual-tactual family. The obvious way of doing this is to refer to the fact that all of them increase steadily in intensity as we move our body nearer to the place where the standard solid is, and reach their maximum intensity when we got there.¹ But this would introduce the conceptions of position and motion which we

¹ Cf. C. D. Broad, *Scientific Thought*, pp. 307-311. Cf. also Chapter IV, above, on the Method of Sources.

have not yet discussed. However, we may reach much the same result in another way. We have only to substitute for the reference to bodily movement a reference to the continuous series of visual sense-data which accompanies bodily movement, and the facts can then be described in purely visual terms, without any mention of movement. We find that within a certain family of visual sense-data, the larger and more differentiated the visual datum is, the louder and more differentiated the sound is. When the visual series reaches its limit in the nuclear visual datum, and when tactual sense-data of the same family also begin to be obtainable, the series of sounds too reaches its limit in respect of intensity and differentiatedness. Exactly the same thing happens with smells and felt heat or cold, except that at the last stage the felt heat or cold actually combines with the tactual datum to form a compound thermal-tactual datum, and this compound datum, like ordinary tactual ones, belongs to two things at once, viz. to the hot or cold object and to my own body or some part of it.

But with all three kinds we find certain sense-data which although commonly regarded as belonging to the thing are connected with the family in a less intimate way. First there are *echoes*. These seem to be analogous to mirror images. An echo is a group of sounds having the same kind of incompleteness as a mirror image has: simulating a certain complete group of sounds as to membership and mode of organization, but stopping short at a certain point, just as a mirror image simulates a certain family of visual data and stops short at a certain point.

In the case of smell, we find that an object (e.g. a fox) may move away out of sight and yet leave 'its' smell behind it. i.e. we can smell the smell 'of' the thing, although at the moment we can obtain no visual sense-data belonging to it. The same thing happens with sounds, though less markedly. There are circumstances in which the sound of a very rapidly moving aeroplane still remains, though the aeroplane has disappeared from sight. Again a thing which is no longer seen, may leave 'a warmth' or 'a chill' behind it. And the taste of a peppermint lump may linger on when the lump itself is no longer tactually present in our mouth.

Nevertheless, there is a certain indirect correlation between these 'stray' data and the family. We can *pursue* a thing by 'following' the lingering smell which it leaves behind it; and

this notion of 'pursuit' again can be explained in purely visual terms. We find that if we keep our visual data unchanged, the smell grows fainter and fainter. But we need not keep them unchanged. And by changing them tentatively in various ways, at last we find a way of changing them which is such that the smell retains its intensity: if we then increase the rate of change, the intensity increases, till finally some member of that visual family is presented, with which the smell is directly united, in the way described on the previous page. We can proceed in the same way with the lingering chill or warmth, and we could do so with the lingering sound if we were able to change our visual fields fast enough.

With taste, however, we cannot. For there is no connexion of taste with sight, and therefore we cannot pursue the 'tasty' object as we can the smelly or hot object, by exchanging old visual fields for new and qualitatively different ones. We cannot even pursue it by touch (as a blind man might pursue a smelly object by feeling his way along a wall), for though there is some correlation of taste with touch, it is a correlation with a certain class of tactual data only, viz those whose bodily 'owners' are the tongue or the palate.¹ It is as if smells and sounds only occurred in Piccadilly Circus; were this so, we obviously could not pursue objects outside that region by means of smell or sound.

There is a further difficulty about all these lingering data. They may linger on after the object which they belong to has been destroyed—that is, when there is no longer any visual family for them to be correlated with. Such data, however, are not completely 'wild' as hallucinations are. For if we go backwards in time, we find that they are temporally and qualitatively continuous with others (more intense than themselves) which *were* correlated with a visual family in the ordinary way, or in the case of taste, with a tactual one. Indeed this is the only way in which lingering tastes can be correlated with a family at all, even if the tasty object has been taken out of our mouth instead of being destroyed.

In the case of *one* object, namely the observer's own body, there are also certain other sense-data of a peculiar kind, namely those which are 'somatic' or 'corporeal'. They are, in general, so elusive and so faint that it is difficult to give

¹ We have seen that every tactual sense-datum 'belongs to' some part of the body of the toucher, as well as to an external thing.

any description of them. Perhaps we may suppose that in the case of any one observer there is only one somatic sense-datum at any time. This one single voluminous datum constitutes our total bodily feeling at that time. It differs from visual and tactual sense-data in that it does not sensibly face in a certain direction. Every visual sense-datum is a 'front' as opposed to a 'back'. It is true that certain tactual sense-data, e.g. that which we obtain when some small thing such as a marble is completely contained in our mouth or our closed fist, are complete three-dimensional expanses, and include front, back, top, bottom and sides all at once. Yet even these have no insides, and do not 'fill' the volume which they 'enclose'. But the somatic sense-datum *completely fills* a certain volume, though usually with but a faint intensity, which grows still fainter towards the volume's boundaries, so that although the 'voluminous' datum has in fact a certain tri-dimensional shape (otherwise it could not be voluminous), it is not easy to tell what shape it is.

'Bodily pains'¹ such as headaches or stomachaches should be regarded not as a particular sort of sense-data, but rather as outstanding *parts* of a sense-datum (namely, of the total somatic one) which display a particularly striking sort of sensible qualities. These qualities from time to time qualify various parts of it, which are then sharply marked off from those other differently, and as a rule faintly, qualified parts of it which adjoin them. Again, if we speak of kinaesthetic *data*—as it is convenient to do—we only mean outstanding parts of the total somatic datum.

We have already pointed out that tactual sense-data (except wild or hallucinatory ones) are also somatic, and that they 'belong to' two things at once, the thing touched and the touching organism. In so far as they are somatic they too should be regarded as outstanding parts of the total somatic datum, marked off from the rest of it by certain peculiar qualities (pressure, hotness, hardness, tickliness, etc.) and usually also by superior intensity. But they are portions of its *surface*, whereas aches and the like may be and indeed most often are portions of its *inside*.

The somatic datum is in several ways less fragmentary than visual, tactual, and other sorts of sense-data; and it is therefore

¹ Of course 'pain' sometimes means an *emotional attitude* of being 'displeased at' something. And plainly this could not conceivably be either a sense-datum, or a part of one. It would greatly conduce to clearness if pain in *this* sense were always called 'displeasure'.

superior to them. This has led Dr. Broad to say that one's own body is 'the typical physical object', and that it is, so to speak, the model in conformity with which other physical objects are conceived by us. This does not seem quite correct, for physical objects (as we shall see) are known primarily by their causal characteristics, and our own body displays those no more and no less obviously than any table or stone. But it is in a way the model for our conception of a *family of sense-data*; in it there is actually given to sense that unity of parts in one simultaneous three-dimensional whole for which the family is a sort of imperfect substitute.

For, first, it follows from what has already been said that the somatic datum is the only 'expanded' one in the case of which spatial synthesis is unnecessary and moreover impossible: and from this again it follows that so far as shape goes *illusion* is impossible in its case. For illusions with regard to shape consist in the taking for granted that an expanded sense-datum has a status in a family of sense-data which it does not in fact have, e.g. that it is nuclear when in fact it is a perspectival or refractive distortion; or in the extreme case, taking for granted that it belongs to a family when it is the sort of sense-datum which could do so (since e.g. it has colour and shape), but is in fact 'wild' and belongs to none (hallucination). But in the case of the somatic datum there is no family which it even could belong to, for it is already a complete three-dimensional whole: and therefore the contrasts between nuclear and distorted, wild and tame, have no application at all. With the somatic datum illusion is only possible with regard to *causal characteristics* (on these and on our manner of coming to be assured about them, see below, pp. 275-280). Thus, given that a certain portion of it displays an 'achy' quality, we may take for granted that certain physical and chemical changes are going on there which are in fact going on in some other part of the region which the somatic datum occupies, or even in no part of it all. What physiologists call referred pains would be instances of the first kind (e.g. a pain felt in the wrong tooth) and hallucinatory pains of the second.

There is one other way in which the somatic datum is superior to all the rest. There is a continuous series of somatic data lasting without a break, though often with but very faint intensity, as long as we continue to be awake: whereas there are moments when we are conscious of no visual data,

and there are moments when we are conscious of no auditory ones, and so on—there are even rare moments when we are conscious of no tactual ones, e.g. when we are in the air during a jump or a fall. Moreover, even when there is an uninterrupted series of data, the data usually differ from each other both in respect of quality and in respect of belonging severally to different things. But in the somatic series all belong to the same thing, and there is often no discernible difference of quality throughout a long period. Perhaps even there is not a somatic *series* at all, but one single datum remaining so long as we remain awake.

SIZE AND POSITION (*preliminary*)

Hitherto we have been mainly occupied in explaining what a family of sense-data is, and how its members are ordered *inter se* by reference to the three characteristics of shape, differentiation and intensity. We have seen that the whole family has for its nucleus a certain set of sense-data which constitute the standard solid, and how non-visual sense-data are included in it.

Now if we are asked what is *the shape* of the entire family it is obvious that we can only answer by describing the standard figure, the shape of the standard solid. The rest of the family, i.e. all the non-nuclear members, is a collection or system, all the members of which do indeed have their own sensible shapes, but which cannot be said to have as a whole any shape at all,—just as a collection of newspaper caricatures all depicting the same man cannot be said to have as a whole any shape, in the sense in which the man himself has. On the other hand, the group of all the nuclear members not only consists of shaped members, but has itself a shape, since they all fit together into one solid.

We should expect to find that the same applies to *the size* and *the position* of the family as a whole. We shall try to show that this is in fact so, and to explain how we determine what the size and the position of it are, as we have already explained how we determine what the shape of it is.

We must begin by saying what a *sense-field*¹ is. A sense-field is a collection which includes all those sense-data of which the following four propositions are true:

- I That they all fall within one and the same specious present.

¹ The term is due to Dr C. D. Broad.

2. That they all have a certain non-spatial determinable characteristic in common (e.g. colour or noisiness).

3. That they all stand in sense-given relations to one another.

4. That they are all sensed by the same mind. (It is very probable that this is not independent of (1) and (3).)

Now some sense-fields, viz. those of sight and touch, also display spatial characteristics. And mere inspection of such a sense-field is sufficient to show what is meant by *sensible size* and *sensible position*. We all know perfectly well what is meant by saying that our sense-datum is sensibly larger than another sense-datum in the same field, or that one sense-datum is sensibly to the right of or above or at a greater depth than another; and we are all acquainted with actual instances of these types of relatedness.

But when we ask what is the size or the position of a *family* of sense-data, clearly it is not sensible size and sensible position that we speak of. To be sure, a family consists of sense-data, and each of these has a size and a position with regard to its own sense-field, but then they come from many different fields. And the other families by reference to which the size and position of this family will have to be determined likewise consist of sense-data from many different fields—very likely from a different group of fields altogether.

Moreover, the various members of the same family have *many different* sizes in their respective sense-fields, ranging from the minimal size below which no sense-datum of that sense can exist at all, to the maximal size, when one sense-datum takes up the entire field. Likewise they have many different sensible positions in their respective fields. Which of all those many different sizes and positions (and there is no finite number of either) are we to choose, when we are asked what is the size and position of the family as a whole?

SIZE

Let us consider size first. Let us take as our examples the visual sense-data of a match-box and the visual sense-data of a table. These form two families. How are we to tell which is the larger? (I mean, of course, '*spatially* larger', not 'containing a greater number of members'. As a matter of fact neither family contains a finite number of members.) Obviously we all think that the table family is the larger. But why do we think this? For some members of

our match-box family, e.g. those seen when I hold it here in my hand, are larger than some members of the table family, e.g. those seen from thirty feet away. The obvious suggestion is, that we must compare only the sensible sizes of sense-data sensed *in the same conditions*; for instance, we should consider only sense-data *at the same depth*.¹

We should then be saying that at any depth d there is a class of relations between the sensible sizes of all the members of F_1 existing at that depth and those of all the members of F_2 existing at that depth. Now this would be all very well if this class of relations remained the same whatever value we gave to d . But it would not. For as we have seen, there is not a one-one correlation between decrease of sensible size and increase of depth²; provided the sensible size falls below a certain limit (which varies with the illumination, with the familiarity of the thing and with other factors) it can increase or decrease without any alteration of depth. There would also be difficulties about magnifying glasses and other 'refractive' agencies.

Clearly the only way out is to compare the *nuclear* sense-data of the two families, otherwise we have no hope of discovering anything which can be called *the* size of either, but only a multitude of sizes between which we have no ground for choosing. Now we might do this merely by memory. Thus whilst actually sensing a nuclear sense-datum of the table, we might remember that a previously sensed nuclear sense-datum of the match-box was very much smaller. And in this way we can and do discover that the whole standard solid of the match-box family is very much smaller than the whole standard solid of the table family, in length, breadth and height.

But in more doubtful cases, e.g. in comparing two match-boxes, we cannot thus rely upon memory; for memory is almost always 'inexact', i.e. remembered characteristics are less determinate than sense-given ones. It is necessary to obtain a series of sense-fields each of which actually contains both a nuclear member of the one family and a nuclear mem-

¹ There will of course usually be an alteration in the *physical distance* between the object and the eye. But this will not help. For physical distance itself is only to be determined by measurement of some kind, and measurement itself can only be defined by reference to that very size-relation between families which we are now trying to analyse.

² We must bear in mind that depth is not the same as physical distance and does not even vary concomitantly with it. Cf. p. 221, above.

ber of the other. We can then frequently tell by direct inspection which of the two sense-data is in each case the larger. Sometimes, however, mere presence in the same sense-field is not enough; it is also necessary that the two sense-data should be wholly or partly coincident. Without coincidence it is never possible to know that two sense-data are *equal* in size.

But what is meant by 'coincidence'? Coincidence of *edges* is fairly easy to understand. It really means *having an edge in common*. Now if A and B are able to have an edge entirely in common, their edges are said to be equally long. And if this is true of our two nuclear data, it will also be true of the two standard solids that a certain edge of the one is equal in length to a certain edge of the other. But *coincidence of areas* is more puzzling. For it requires superposition. Now it is obvious that one sense-datum A cannot literally be superposed on another B, for this would require that B as a whole, or some part of it, shall exist when not actually sensed. When we speak of superposing one sense-datum A upon another B, what we really mean is the following: (1) That B has ceased to exist, (2) that other members of the sense-field continue to exist, (3) that A has the same sensible position with regard to them as B had. (B may be a whole sense-datum or a part of some larger one.) When these conditions are fulfilled, A and B are said to be equal in area. And if this is true of the two nuclear data, then of course it will also be true of their respective standard solids that a certain surface of the one is equal in area to a certain surface of the other. *Equality of volume* cannot be directly determined by any kind of coincidence of sense-data. But fortunately both it and area can be determined indirectly, since both are functions of length in different dimensions, and of shape.

It is clear that all *measurement* of standard solids, and therefore all measurement of material things (for the standard solid is our only clue to the spatial characteristics of the thing), rests entirely on such 'coincidence' of sense-data as we have just described. To measure a thing is to determine that the standard solid of its family is equal in length (or whatever dimension) to so many parts of some other standard solid which we take as our 'measure'; e.g. that the two sides of it are as far apart as the two ends of a certain portion of the standard solid, a foot-rule, which portion itself contains so many equal parts. And in marking out our foot-rule, we must

again make use of coincidence of sense-data. For we mark it out by causing a certain set of parts along one edge of a hitherto uniform standard solid to be sensibly differentiated from each other (which involves corresponding differences within other members of the family). And to ensure that all of these parts are equal in size, we have to cause some other standard solid to be coincident with each of them in turn.

We are now in a position to deal with a difficulty concerning size which has been used to throw doubt upon the very existence of material things. It is said: 'A material object is a spatial entity; it must therefore have a size. But it is impossible to say what its size is. What, for instance, is the size of this match-box? It appears to have different sizes from different distances. And can you draw a chalk line round it and say "the size which it appears to have from this distance is *the* size of it, all other sizes are only apparent"? Clearly it is irrational to draw your chalk line at any one distance rather than any other. And even if there were any ground for choosing one particular distance, there are still microscopes and magnifying glasses, which make the object appear larger. And there is no ground for preferring any of the naked-eye sizes to any of the magnifying-glass sizes, or for preferring any of these to any other. Thus it is quite impossible to say what its physical size is. What ground is there, then, for thinking that there is any physical size? But if there is not, there is no material thing at all.'

In answering this objection, the first thing to remember is that all size is relative. There is no sense in speaking of *the* size of something, as if it could have a size in itself. And there is not the slightest reason why an entity should not have many sizes at once—one size in relation to one thing, another in relation to another. Thus a walking-stick is small in relation to a man, long in relation to a straw, and a large mouse is also a small mammal. Accordingly, when we are asked to say what is the size of the tree we can only answer that the question is ambiguous. But as soon as it is made definite, a definite answer can be given. For instance, in relation to this foot-rule the tree is eighteen times as high: or, as we say, it is 'eighteen feet' high.

All this is of course perfectly obvious. What is not so obvious is that in the present case there are not just two terms to be considered but two quite different pairs of terms; and the difficulty arises from ignoring this. On the one hand,

there are size relations *between one whole family of sense-data and another whole family*; and that really means between their standard solids, e.g. between the standard solid of the match-box and that of a match or that of a foot-rule. And these can be definitely determined (or at least, as definitely as one pleases). On the other hand, there are size relations *between one single sense-datum and another single sense-datum*. And when we ask what is the real size of the match-box what we are really asking about is the size relation of the match-box family to other families: and to this question there is a perfectly definite answer. But information about the relations of the match-box sense-data among themselves throws not the slightest light upon it—nor the slightest darkness either. If as we walked towards the match-box, or introduced a magnifying glass, we altered not merely the size of the *sense-datum* in relation to other sense-data in the family, but also the size of the *standard solid* in relation to other standard solids, then indeed there would be difficulty, and we should then be unable to say what were the 'real' size relations of the match-box. But this is exactly what does not happen. The size of the family as a whole, i.e. of the standard solid, remains perfectly constant, whether we happen to be sensing a larger or a smaller member of it, and whatever sort of transition we make from one member to another.

POSITION

We must now consider the *positions* of families with regard to one another. And here again the main thing is to determine the relations between the nuclear members of one and the nuclear members of another, i.e. between the several standard solids. For just as in the case of size the non-nuclear members of F_1 stood in all sorts of *different* size-relations to the non-nuclear members of F_2 , so that some sense-data of a pea are larger than some sense-data of a table, so also they stand in all sorts of *different* position-relations to each other. Let us confine ourselves to the sense-data of two objects, A and B, and let us consider only one surface of each object. We have only to think of the effects of uneven glass, of prisms, and of mirrors to realize that the different sense-fields each of which contains both a sense-datum of A and a sense-datum of B may differ very greatly in sensible pattern: in one the distance between the two sense-data will be great as compared with their sizes,

in another little, in some the A sense-datum will be above the B one, in some below, in some both sense-data will be 'the same way up', in some they will be 'opposite ways up' so that one of the objects will appear to be turned upside-down.¹ There is also a further complication which did not arise with size: in some fields there will only be a sense-datum of one of the two families, not of both, and what are we then to say about the positions of the two data? Each has a position in its own sense-field. But what of their position in relation to one another? Have they any at all?

But before we can discuss the position of our standard solid with regard to others, we shall have to consider the relations of the several sense-data within the standard solid itself. To clear matters up, we may first state an objection which might be brought against our whole account of the standard solid. We have assumed that the surface of the standard solid is literally *composed* of certain sense-data; and that these sense-data are *adjoined* to each other at various angles, so as to form a continuous closed surface in three dimensions. But how it is obvious that the whole surface can never as a whole be given to sense. Only the single sense-data can be given one by one. How then do we know that the sense-data are adjoined at all? The only spatial relations which are actually given are those within each single sense-field; whereas all these 'nuclear' sense-data are in different sense-fields. If so, what evidence can we possibly have that they are spatially related to *each other* at all? Does it even mean anything to say that they are so related? It is of course quite clear that they *collectively resemble* a solid very closely. But it is a long step from that to say that the solid actually exists. It may perfectly well be 'imaginary': i.e. be such that if it did exist they *would* collectively resemble it. And if it does exist, it is another long step from collective resemblance to spatial coincidence. Ought we not therefore to be content with the collective resemblance, which is all that we can be certain of?

An analogy may make this point clearer. Let us suppose that an architect is designing a building. He makes drawings of the various sides of it, and a plan view. Now those drawings collectively resemble the building. But there is not the slightest necessity for the drawings themselves to be spatially

¹ It is said that in northern waters distant islands occasionally appear the wrong way up

adjoined at their edges so as to compose a single three-dimensional shape (like a paper box). It does not matter in the least what spatial relations they are in. It is not even necessary that they exist simultaneously. Before drawing another one, the architect might always burn the one which he had just finished; and if so, they would not stand in any spatial relations, but they would still display the required collective resemblance. Further, from the fact that there is the set of drawings collectively resembling a certain building, it does not in the least follow that the building actually exists. And if, as a matter of fact, it does exist, the drawings are not necessarily plastered over its outer walls: and whether they are or not makes no difference whatever to their collective resemblance to it.

I do not think that this Collective Resemblance Theory could ever be proved to be true; it could not prove that the sense-data did not actually compose the surfaces of the solid which they collectively resemble. The most it could maintain would be that there is no reason for thinking that they do. But this would be quite enough: and we should then be well advised, following the methods of Mr. Russell, to *redefine* a nuclear set of sense-data as a class of sense-data collectively resembling an imaginary or ideal solid, i.e. which *would* collectively resemble a particular sort of solid (say a cube) if there were one. leaving it an open question whether there actually is one or not.

Still nobody can really think that the theory is true. Within the range of complete stereoscopic vision at any rate, every one believes that the sense-datum of the back of the match-box is literally *beyond* the sense-datum of the front of it; i.e. that the sense-datum of the front lies *between* this sense-datum of my finger (say) and the sense-datum of the back, in just the same sense as that in which one of three sense-data in the same sense-field is between two others. It is true that we cannot learn this merely by inspection of one sense-field; but—as every one believes—that does not matter.

Can we defend this belief? It seems to me that we can, provided three admissions are made. We must admit, first, that some sense-fields are not momentary, but have a *finite duration* (and in point of fact it is obvious that all have); secondly, that not all series of sense-fields are discrete, i.e. that two successive sense-fields are sometimes *continuous* with each other in time and in quality; thirdly, that two successive

sense-fields sometimes *overlap* in time, i.e. have a part of their durations in common. I do not know how we could prove these three propositions, but all three seem to be obviously true.

If their truth be admitted, our belief that one visual sense-datum is sometimes literally behind another can be justified in the following way. Let us take the case of the match-box. We find that we can sometimes apprehend two pairs of sense-data in succession such that—

1. In each pair the two members sensibly adjoin each other
2. In each pair the two members face in sensibly different directions.
3. The two pairs have one member in common.
4. In each pair one member is sensibly to the right of another (The relation might equally well have been 'to the left of', 'above' or 'below', provided it is the same in both pairs.)

If these conditions can be fulfilled, then—calling the two pairs A B and B C—we know that C is beyond A. The procedure by which we reach this knowledge may be called the *Method of Progressive Adjunction*.

Had all sense-data been momentary, or all successions of sense-data discrete, it is obvious that condition (2) could never have been fulfilled; since the two pairs of sense-data are necessarily successive, and can only have a member in common if a sense-datum can remain the same despite lapse of time. It must be admitted that some philosophers would find a difficulty in condition (1), for some have held that the visual field is always two-dimensional. But this opinion is just obviously false. It is simply a fact that colour-expanses in the same visual field do often face in sensibly different directions. The denial of this arises only from certain physiological hypotheses¹; and however plausible these might be in themselves (in point of fact they seem rather naive) they are powerless against the patent empirical facts. *Only inspection of sense-data themselves can tell us what qualities and relations they actually have; and if it follows from some theory that they ought to have other ones, so much the worse for the theory. We may add that all physical science and therefore all physiology rests ultimately upon acquaintance with sense-data, without which there would not be the acts of perceptual consciousness which provide its empirical premises; therefore any physiological proposition which contradicts the information given by such acquaintance is certainly false.

¹ Cf. C. D. Broad, *Scientific Thought*, pp. 295-9.

Now if by this procedure we can know that one sense-datum is beyond another, by repeating it we can know that the set of sense-data are so related as to form a closed three-dimensional surface, i.e. a standard solid. Thus the group of nuclear sense-data not merely collectively *resemble* a certain solid; they collectively *are* a solid—or if this word misleads, they collectively are a three-dimensional whole.

The Collective Resemblance Theory is therefore false, at least as regards nuclear sense-data. There is, however, this much truth in it: A B or B C or again C D is a *sensible* complex, whereas A B C and still more A B C D is not. Still more obviously the whole solid is not. And this does not merely mean that our mode of apprehending them is different, the consciousness of the one being acquaintance, and that of the other what we may call 'synthetic'; though of course there is this difference. It means also that the complex A B has a certain characteristic which we may call *sensible pattern-quality*; and B C also has it. But the total complex A B C does not have it, nor does A C: still less does the whole group which is the standard solid have it. When it is said that two sense-data from different fields cannot stand in 'the same kind of spatial relation' as two sense-data in the same field, part of what is meant is that they do not form a complex which has sensible pattern quality. Its absence, however, would only be evidence for the absence of that kind of spatial relation, if its presence were known to be wholly dependent upon the presence thereof. And this seems not to be so; it seems to be necessary also that the two sense-data which are to have the quality should be simultaneously sensed by the same mind.

It is also possible that the Collective Resemblance Theory, though not true of nuclear sense-data, is true of the other and inferior members of the family. It may be that between them and the standard solid there is no *spatial* relation at all, but only various degrees of collective resemblance.

So much for the relations of nuclear sense-data within a single standard solid. We can now go on to consider the positions of standard solids with regard to one another. We can deal with this question in the same kind of way. The procedure just described enables us to establish the shape of a single standard solid. We can now apply it on a larger scale to determine the collective shape or 'lay-out' of a whole group of such solids.

Let us consider a group of standard solids A B C D . . . N, for instance, the standard solids belonging to a number of rocks, which cannot all be seen at the same time. Let us symbolize nuclear sense-data composing A by a , those composing B by b and so on. Then we have to obtain a series of pairs of sense-data aRb , bRc , cRd . . . ending with nRa' ; where R stands in each case for some sense-given spatial relation, such as distant from, to the right of, or the like. It is not necessary that in *every* pair the two members should face in sensibly different directions. some of the rocks may, as we say, have their faces exactly parallel; but it is necessary that in *some* pairs they should do so, otherwise we shall never re-apprehend A with which we began. (Indeed even in the case of a single solid this is not necessarily true of all the pairs; the match-box solid which we took as our instance happens to be a small one—i.e. any nuclear sense-datum of it is easily included in one sense-field. In the case of a relatively large single solid, however, e.g. that of a house, even the shape of one face of it, e.g. of its north wall, can only be discovered by successive adjunction of sense-data; and in any pair of these both members will face in the same sensible direction.)

We may deal in a similar way with the spatial relations of tactual sense-data to visual ones. This is a famous problem, and very strange views have been held on it; but I cannot see that it deserves its reputation. It has been thought that a tactual datum is never even similar to a visual one and that the relation between them is simply the being associated by temporal contiguity. (I suppose the association by contiguity is between tactual data and *nuclear* visual ones, and that other visual data are in turn associated with those by similarity, but the point is never clearly explained.) It is plain that this doctrine is just untrue. When I lay my hand on a penny I sense a cold circular expanse; and when I look at a penny from directly above I sense a brown circular expanse. It is just obvious that these two shapes are exactly alike. To be sure, brownness is not in the least like coldness (who ever thought it was?) and this does necessitate a difference of 'form-quality' between visual and tactual data and of 'pattern-quality' between visual and tactual fields. But it does not necessitate a *geometrical* difference. In each of the two sense-data, all parts of the edge are equidistant from a single point. So far, then, they are exactly alike. Even if the extraordinary opinion that every visual field is two-dimensional had

happened to be true, it would not in the least follow that no tactual shape is like any visual shape ; for some tactual data are certainly two-dimensional (e.g. this one of the penny), even though many are not. And in point of fact it is simply obvious that the visual field is three-dimensional, and that all visual data visibly have 'depth' or 'outness'. To say that this third dimension is 'not really visual' is simply a confusion. It is inseparable from colour and from visual form and pattern, and is therefore part of what we sense. And if we sense it we do sense it, whatever the causes of our sensing it may be.

Further, it cannot be denied that the nuclear set of visual data belonging to a certain thing and the nuclear set of tactual data ¹ belonging to it are *similar* three-dimensional wholes or solids. But it may be doubted whether they are more than similar, i.e. whether they are also spatially coincident. When we say they are coincident (as we certainly do), it may be thought we only mean (1) that they are similar three-dimensional wholes, (2) that they belong to the same material thing. This is the only doubt which is really worth discussing.

Now it is quite plain that even if the two sets are not coincident, they are at any rate more than merely similar. For in addition to this collective similarity, each part of the one stands to some parts of the other in a curious relation which we may call 'dovetailing'. There is at any rate a peculiar kind of whole (call it what you will) composed of both visual and tactual members. This whole is constituted by the fact that the tactual data *supplement* the visual ones in just the way in which other visual data would supplement them if obtained by progressive adjunction. Likewise the visual data fill up what is lacking in those tactual ones which do not by themselves form a complete solid.

For instance, we see the front side of a match-box and feel the back and the two ends with our hand. It is clear that the visual datum and the tactual ones together form a certain kind of whole or complex, such that the visual datum of the front of the box is indirectly united in a certain way with the tactual datum of the back of it, by being directly united with the tactual data of the two ends. Now this way of being united seems exactly like that in which visual sense-data are united among themselves by progressive adjunction :

¹ We must remember that not all tactual data are nuclear. There are distortions in touch as well as in sight.

except that the adjunction is here simultaneous and not progressive, for all the *adjuncta* exist at once. Apart from this temporal difference, it seems that the tactual datum of the back is related to the visual one of the front exactly as a visual one of the back would be if obtained by progressive adjunction; and that the tactual datum of one end and the visual datum of the front face in different directions, exactly as two visual or two tactual data might do.

At any rate there is a very obvious relation between this visual and those tactual data (despite their utter difference of quality) and this is the relation we *mean* when we say they are spatially related. And when we say that a nuclear set of visual data is spatially coincident with a nuclear set of tactual ones, we mean that each member of either set is related to members of the other in these ways. If any one thinks that this is not a justifiable use of the expressions 'spatial relation' and 'coincidence', let him find others; but it seems clear that they are here being used in precisely their ordinary sense.

ARE SENSE-DATA IN PHYSICAL SPACE?

Finally, we may ask whether visual and tactual sense-data have positions in what some would wish us to call 'the Space of Standard Solids'. (This is the same as 'physical' or 'public' space) We have already said something on this question in Chapter V; but as it is both important and puzzling, perhaps some repetition may be excusable. What we have to consider is whether visual and tactual sense-data stand in relations of distance, nearness, betweenness, etc., to standard solids, as these do to one another: this is what is meant by asking whether they are 'in the space of' standard solids. That nuclear sense-data at any rate are thus related to standard solids may seem obvious. For if we reject the Collective Resemblance Theory (cf pp. 240-3, above), does it not follow that a nuclear sense-datum is coincident with one of the surfaces of the standard solid of its family? Accepting this for the moment, let us see what is to be said about non-nuclear data.

It is clear that any non-constructible sense-datum *S* will necessarily have spatial relations to other sense-data in the same sense-field; and of these others one or two may very well be nuclear members in their several families, although it is not likely (except in a case of very marked local refraction) that any of them will be a nuclear member of *S*'s own family.

Suppose, then, that in its own sense-field *S* is sensibly between two nuclear data and *N* and *N'* belonging to two different families: *S* might be a reflection of my face in a polished teapot, and *N* and *N'* might belong to two cups. Now if *S* is thus between *N* and *N'*, and if *N* is a constituent of one standard solid and *N'* of another (which by definition they are), it seems difficult to deny that *S* is between these two standard surfaces and therefore has a position in the system of standard solids, or to use the customary language in 'Physical Space'. Similar considerations would suggest that almost all non-constructible sense-data, even some of the wildest hallucinations, had positions in that system. Only those would be excluded from whose fields nuclear sense-data were entirely absent, and it might be maintained that even they really had positions in it, although this absence prevented us from *knowing* what their positions were. Thus the system of standard solids would be crowded with all sorts of incongruous and unwanted entities, harmless enough when kept in their own sense-fields, but very embarrassing when let out.

But fortunately there is a fundamental error in this whole line of thought. It ignores the obvious fact that two relational systems can have one term (or several) in common without having *all* terms in common. It is not in virtue of its sensible proximity to *S* that *N* (or *N'*) has a position in the system of standard solids, but in virtue of quite a different set of relations—namely, in virtue of being connected with various other sense-data by progressive adjunction. Now even if it were in quite a different part of the sense-field, even if *S* did not exist at all, these relations would be quite unaffected, and *N* might still have exactly the same standing in the system of standard solids as it has now.

S, on the other hand, though it does stand in relations, does not stand in relations of this kind. There are no sense-data related to *it* by progressive adjunction, and forming along with it a standard solid. (That is why it is called 'non-constructible'.) It therefore has *no position at all* in the system of standard solids; lacking the required kind of relations, it simply has not got the entrée into that world, and can never become a member of it, even though related in *other* ways to terms which are members and perhaps play a distinguished part there. It has a place in its own sense-field only, while *N* has a place both there and in the world of standard solids as well. And the fact that these two systems are in some ways

similar and have one or several members must not blind us to the equally obvious fact that they are also different.

We may try to make this point clearer as follows: A and B may both belong to the same Territorial battalion, and A may be a major in it and B a subaltern; again B may belong to the Civil Service and hold a certain 'position' in it. But from the fact that A stands in a certain relation to B in the Territorial battalion, it does not follow that he stands in *any* relation to B in the Civil Service, there is not the slightest reason for thinking that A is in the Civil Service at all. B, on the other hand, belongs to both groups and has a position in both. And although both groups are somewhat similar (for both are hierarchically organized) and have one or several terms in common, it does not follow that they are identical.

Thus if 'somewhere' means 'somewhere in the system of standard solids' or 'in physical space', as it usually does, then we shall certainly have to say that non-constructible sense-data, though they have places in their own sense-fields, are *nowhere*.

Some, however, will find great difficulty in accepting this conclusion. They are convinced (it is not clear why) that everything which has spatial characteristics at all must be somewhere, in this 'eminent sense' of the word; that it should be somewhere in its own sense-field does not content them. For the consolation of those thinkers we may point out that even a non-constructible sense-datum, though it *has* no place of its own in the system of standard solids, yet is, as a rule, specially connected with some one place in that system; for as a rule it belongs to a distortion series, and the limit of this is a nuclear sense-datum which coincides with a surface in that system and therefore has got a place in it. And we may say if we like that between the non-constructible sense-datum and one of the surfaces of that solid (the standard solid of its family) there is a relation of *eventual coincidence*, meaning by 'eventual' that by starting at this sense-datum and sensing one member of the series after another, you eventually reach one which actually is a constituent of the standard solid.¹ But eventual coincidence is a poor substitute for proper loca-

¹ It is also connected (in another way) with the point of view from which it is sensed, and this is almost always somewhere in the system of standard solids. The only exception is the case where the whole sense-field is hallucinatory, as in a 'vision'. Here the observer's *body* still has a position but if the account of 'points of view' given below is correct, his point of view is nowhere in Physical Space. Cf. below, p. 254.

tion, and in the case of hallucinations even that will fail, for they are not members of distortion series. And mirror-images are little better. A mirror sense-datum does indeed always belong to a distortion series,¹ but only to one which stops abruptly and has no nuclear sense-datum for limit. All we can say of it is, first, that if there had been a solid in the system of standard solids with one of whose surfaces it was eventually coincident, then that solid *would* have been in such and such a place behind the mirror, which we can determine with great exactness; secondly, that there actually is a standard solid with which it has a still more derivative and indirect connexion, namely, that the constituent sense-data of it *exactly resemble* certain sense-data which are eventually coincident with one of the surfaces of that solid (This relation we might call 'eventual quasi-coincidence', if it is worth while to give it a name.)

Similar considerations apply even to those constructible sense-data which lie outside the range of perfect stereoscopic vision. For as we have seen, they are only 'imperfectly' constructible owing to their 'flattened' character. And this really means that the mode of spatial synthesis which they admit of is not that which is characteristic of a real standard solid, but only *resembles* this; and the resemblance is imperfect, with various degrees of imperfection in different cases. It follows that they do have a place in a system of their own, a system not confined to any one sense-field but uniting together members of many. This system *resembles* but still is not a *part* of the system of standard solids; therefore its members can have *no positions* in the system of standard solids—except of course in the way of 'Eventual Coincidence'. But thanks to this resemblance, they give us valuable indirect information about standard solids and their parts and enable us, especially in the case of large objects, to substitute simple and easy processes of spatial synthesis for long and elaborate ones.

Non-nuclear sense-data then are not in Physical Space. At the most they are related to standard solids only by the relation of eventual coincidence. We have hitherto been assuming that nuclear sense-data, on the contrary, *are* in it—for instance, that a certain nuclear sense-datum of the match-box family is six inches from the standard solid of the table family.

¹ We have seen already that a mirror-image is not a solitary sense-datum but an organized group of sense-data having a peculiar 'incomplete' structure. (Cf. above, pp. 228–9.)

But this is not really quite accurate. Sense-data can be spatially related to other sense-data, and standard solids to other standard solids: but, strictly speaking, sense-data, even nuclear ones, cannot be *spatially* related to standard solids, nor standard solids to sense-data. In fact, distressing as it may seem, we have to distinguish no less than three distinct types of relatedness, all of which might be called spatial: (1) that which holds between any expanded sense-datum and any other sense-datum in the same sense-field; (2) that which holds between certain sense-data of different sense-fields (progressive adjunction); (3) that which holds between one standard solid and another, and derivatively between one whole family of sense-data and another.¹

The relation between a nuclear sense-datum and a standard solid is really that of being a *constituent* of it; and the manner of constituting is given by progressive adjunction. A nuclear sense-datum is directly or indirectly adjoined with certain other nuclear data and these collectively *are* the standard solid. This relation of adjoinedness is not a relation between the standard solid and something else, like 'to the right of' or 'larger than': it is a relation *constitutive* of the standard solid itself, and unless this relation was already subsisting there would be no standard solid to stand in spatial relations, or in any others.

It may, however, be thought that the relation of nuclear sense-data to standard solid is that of *spatial parts to spatial whole*, like the relation between the pages and the book. But this is a mistake. No doubt they are in a sense 'parts' of the standard solid, but not in that way. (Accordingly since 'part' usually means spatial part, we have avoided the word and used 'constituent' instead.) For that which is a spatial part of a solid must itself be a solid, and this a sense-datum is not. It is just an expanse with no back.

But might not the relation be that of *surface to solid*? Every visual or tactual sense-datum is an expanse: and nuclear ones (it may naturally be thought), in virtue of their relation of progressive adjunction to each other, are also surfaces of certain solids. It is true of course that an expanse is not necessarily a surface²: but might not some expanses be surfaces all the

¹ Any one who likes may say that only one of those types of relatedness deserves to be called '*spatial*'. But there they are, all three of them, whatever name we call them by.

² Cf p 110, above.

same? But this, too, is a mistake. There is no relation between a solid and its surface in the sense in which there is a relation between two solids. For there is no such entity as a surface. There is only a thus and thus surfaced solid. 'Surface' is really a name (and a bad because substantival name) for a set of characteristics characterizing something. But a sense-datum is not a set of characteristics: it is itself an ultimate subject of characteristics, a particular existent. Thus even a nuclear sense-datum cannot possibly be a surface. We may try to bring out the point in another way. The only conceivable spatial relation between a nuclear sense-datum and a standard solid would be that of *coincidence*. But what sort of coincidence is meant? Clearly it must be coincidence of surfaces. Now when we speak of coincidence of surfaces, what we really mean is that *two solids* have a surface in common. But in the present case where is the second solid? The sense-datum is not a solid, but only an expanse. It neither has surfaces, nor is a surface, though it is a constituent of a whole which collectively has them.

If all this be right, we shall have to conclude that no individual sense-datum, nuclear or not, can have a position in the space of standard solids. Position in that space will be a *collective* characteristic, belonging to a certain group of sense-data as a whole, and to nothing less—primarily to that sort of progressive-adjunction group which is a standard solid, and derivatively to the family of which that is the nucleus. An individual sense-datum of sight or touch has a position in its own sense-field, and if it is nuclear it is also related to other nuclear data by progressive adjunction, and accordingly has a position in a particular progressive adjunction series; but that will be all. (The same applies to size. Every expanded sense-datum has a sensible size. But no individual sense-datum, not even a nuclear one, can be, for instance, six inches long; that is a collective characteristic, characterizing nothing less than an entire standard solid.)

But this is not the end of the matter. To say without further explanation that a nuclear sense-datum has no position in Physical Space (the Space of standard solids) is much more misleading than to say that it has one. For, negatively, it suggests that there is no particular difference between nuclear sense-data and others, all alike being somewhere in their own sense-fields and nowhere in Physical Space; whereas in fact there is the greatest possible difference, namely, that they are

synthesizable and the others are not. And positively there is an extremely important qualification to be put in. Nuclear data have no positions in the world of standard solids; but everything which does have position there is *composed* of nuclear data. The only reason why they have no positions in that world is that they are too important; they stand in a more fundamental relation to it, that of being the constituents of the things which have. So, too, sheep or owls or dogs have positions in the Animal Kingdom, and cells have not: but everything which has a position there is composed of cells, and if there were no cells related to each other in an organic way there would be no Animal Kingdom for anything to have a position in.

Thus, if we are asked whether non-nuclear sense-data have positions in Physical Space, the space of standard solids, the answer is, No. But if we are asked whether nuclear sense-data have positions in it, we cannot give a simple answer. What we must say is that the question is a misleading one, the fact being that Physical Space is itself *defined* in terms of nuclear data: for it is defined as that in which standard solids are located, and a standard solid is defined as a group of sense-data related to each other by progressive adjunctions¹. And the relation of progressive adjunction, though it is not a relation *in* Physical Space (like 'five inches North of'), is a relation *constitutive* of Physical Space; unless some sense-data are related by this relation there is no Physical Space at all.

THE POINT OF VIEW OF THE OBSERVER

It is obvious that position is a characteristic which belongs not only to objects, but also (at any rate in some sense) to the observer, this position is commonly called his *point of view*. I do not mean by this the position of his body, but the position 'from which' his sense-data exist at a particular moment. Now the position of a material thing may provisionally be identified with that of the standard solid of the thing's family: certainly it is the position of this (as it is also the shape and size of this) that we are assured of in perceptual assurance. And

¹ Thus, although in the literal sense of the word they have no position in it, yet in a familiar wider sense (as when we speak of the position of so-and-so in a particular institution, say of the President in the American Republic) they do have a 'position' in it, and one which could not be more important.

we have shown that the position of the standard solid can be defined in purely visual terms, i.e. in terms of visual sense-data alone. Can the observer's point of view also be defined so? Could a purely visual being, with no other sense but sight, know what his own point of view was? It seems to be that he could, and that no reference to kinaesthetic experience, for instance, is necessary for this purpose.

The primary sense of 'point of view' is point of view within a single visual field. But this is not something given, as the sensible position of visual sense-data is, and it can only be defined by a method of approximation. Imagine a sense-datum X which is exactly in the middle of the field of view, and at a certain depth. Now imagine the depth of it to be progressively reduced: then the place where it *would* be if it were of minimal depth is the point of view belonging to that visual field. And this is the place in the field 'from which' the rest of the field exists, or if it is not, strictly speaking, itself a place *in* the field, then it is the place to which the successive positions of X (which *are* in the field) progressively approximate. It is clear that a point of view in this primary sense is not really a point but a surface. For obviously an entire sense-datum, provided it is not too big, can be at a small depth; and as the depth is reduced there is no need for the sense-datum to become any smaller.

But there is not only a point of view within a single sense-field, there is also—and this is more important—what we may call a *neutral* or *physical* point of view, which is common to many different visual fields, and confined to none. For there is clearly a sense in which many different views can be seen from one point of view. And there is clearly a sense in which one's point of view persists as sense-fields come and go. Sometimes it remains the same for a period, at other times it changes, or as we say 'shifts', i.e. moves;¹ and both facts alike testify to its persistence, for only the persistent can change or move. It is clear that this neutral point of view is a position in the system of standard solids, and it is of this that we commonly think when we use the phrase 'point of view' or its equivalents, e.g. when we speak of the place from which such and such a thing can be seen. And we think that all the points of view which an observer occupies during a certain day form a line, which winds

¹ We commonly say 'shifts' instead of 'moves', because we reserve the term 'move' for material things. But what we mean clearly is motion.

hither and thither through the system of standard solids like Ariadne's thread, and is broken off short whenever he falls asleep, or goes into a perfectly dark place or ceases in any other way to be visually conscious.

Just as the position of a standard solid is defined in terms of 'sensible position' but is not identical with it, so neutral point of view is defined in terms of 'sensible point of view' but is not identical with it. Let the sense-datum X by reference to which sensible point of view is determined be a *nuclear* sense-datum: this means that it is a constituent of certain standard solid x having a certain position in the system of standard solids. Now of course X has in fact a certain finite sensible depth in its sense-field, and could not otherwise be a visual sense-datum at all. But its depth might be progressively reduced, and if it were, this would entail a progressive change in the position of x . And as X approaches nearer and nearer to minimal depth, x likewise approaches nearer and nearer to a certain position p with regard to other standard solids. Then p is the neutral or physical point of view at which the observer is when he is sensing that sense-field; it is, in short, the position at which the surface of a standard solid would have to be in the system of standard solids, in order that a nuclear sense-datum which is a constituent of it should be at minimal depth in this sense-field. And when a sense-field contains a sense-datum whose standard solid would have to be at p for this to happen, that sense-field may be said to *exist from* the place p , and to be sensed from it.

But if this is what neutral point of view is, how am I to *discover* it in any particular case, seeing that no nuclear sense-datum ever actually is at minimal depth? The answer is obvious. In any visual field there will probably be several nuclear sense-data. These are actually at small finite depths. Choosing the one at the smallest, I determine where the standard solid actually is of which it is a constituent. (Should there be no nuclear sense-data present, I shall have to be content with eventual coincidence; but there nearly always is one.) I then know that my point of view is somewhere in the immediate neighbourhood of that surface, to discover exactly where, I have only to estimate how far the solid would have to be moved and through what distance, in order to reduce the sense-datum to minimal depth.

We can now define the important notion of *change of point of view*. To change one's point of view is to experience a series of

visual fields $F_1 \dots F_n$ of the following sort. The sense-datum of minimal depth in F_1 has to be a constituent of a standard solid situated at a place p_1 in the system of standard solids, and that at minimal depth in F_n has to be a constituent of one having a different position p_n ; while those having minimal depths in other intermediate fields have likewise to be constituents of other solids situated in intermediate places.

If this is what is meant by change of point of view, how do we discover in a particular case how much and in what direction our point of view has changed? At one moment our point of view is in the neighbourhood of one standard solid, at a later moment in the neighbourhood of another. Now, as we saw, we determine *their* positions with regard to each other by the method of progressive adjunction; this, then, will also inform us of the change in our point of view. Thus, if I am walking through a wood, I sense a series of nuclear visual data at small depths, and each of these is a constituent of a different standard solid, having its own position in the system of standard solids. Or again, as I go along the street, I sense a series of nuclear data belonging to the several stones of the pavement, all adjoined to each other so as to make up one long surface in the system of standard solids. This series of related sense-data (whether discrete¹ or continuous) constitutes the 'path' or 'route' along which I move: it may of course be curved in various ways, and usually is. And since our point of view is now in the neighbourhood of one part of the series, now of another, we are able to learn how our point of view is changing. We might equally well use a wall or fence along which we walk, provided it falls within the range of perfectly stereoscopic vision.

We have now defined 'point of view' and 'change of point of view' entirely in terms of visual sense-data, without any mention of kinaesthetic or other somatic data; we have not even mentioned visual sense-data belonging to the observer's own body. It follows, if we are right, that a purely visual being, i.e. one having no sense but sight, could know that he had a point of view and that he was changing it thus and thus. What is more surprising, it follows that a visual percipient without any body at all could have a point of view and change it just as we can. And does not this mean that he could *move*?

¹ If it is discrete, any two neighbouring members of it must fall within the same sense field, else we shall not know how they are spatially related.

For to be at a point of view is to have a position, and change of position is surely motion. Moreover, a visual percipient who does possess a body would not necessarily have to be where his body is, but might conceivably be at a distance from it ; again, he might conceivably stay at the same point of view while his body moved about, or change his point of view, i.e. move, while his body remained stationary (If there be any genuine cases of clairvoyance, they would illustrate this possibility.) I do not of course maintain that any of these possibilities are actually realized, I only say that there is nothing self-contradictory in them, and that there is nothing in the nature of our visual experience itself (though much perhaps in the causes of it) which precludes them

May we not say, then, that Locke was quite right in his contention that 'spirits are capable of motion',¹ though quite wrong (as he is apt to be) in his reasons for it? 'Nobody', he says, 'can imagine that his Soul can think or move a body at Oxford, whilst he is at London.' 'Whilst *he* is at London' must obviously mean 'whilst his body is at London', otherwise the question is begged. But we now know that by means of the telegraph and other such devices a man whose body is at London can move a body at Oxford, at least in the sense in which he can move a piece of coal in his London room with a poker. Thus by Locke's account any telegraphist ought to be in two places at once. And if clairvoyance is possible, a clairvoyant whose body is in London could 'think at Oxford', that is, think about sense-data which he is at that moment sensing from a point of view situated in Oxford—for I do not see how 'thinking at a place' can bear any other meaning but this. Thus, according to Locke, he, too, is in two places at once. By defining the 'motion of spirits' in purely visual terms, without any mention of the observer's body or of actions done by means of it, we avoid these difficulties.

We also stick to common sense and the ordinary usage of language. When a plain man (or a philosopher in his plain moments) speaks of having 'been at' such and such a place, he is primarily thinking of visual sense-data, he means that he has sensed visual fields existing from points of view in or near that place. He is not necessarily thinking of his body at all. This is clearly shown by analogous phrases such as 'imagining oneself to be at such and such a place' or 'to be moving in such and such a way'. When someone says to me 'Imagine

¹ *Essay*, Book II, ch. 23, Sections 19 and 20.

yourself arriving at Paddington ' he does not mean that I am to 'imagine', that is, to image the kinaesthetic sense-data incident to sitting in a decelerating train ; for this I am quite incapable of doing, and even if I could do it, they would be indistinguishable from those incident to arriving at Euston or St. Pancras, and therefore irrelevant. He is telling me to image a succession of visual fields existing from a series of points of view near to and inside Paddington Station. So also if a man dreams of flying down the stairs, this means that in his dream he successively images to himself the sense-data which exist from various places on the stairs. The revival of kinaesthetic and other intra-somatic data, though not unknown in dreams, is certainly far less common than the revival of quite complicated series of visual ones.

Thus kinaesthetic and other 'somatic' experiences do not play the essential part sometimes attributed to them in providing us with information about our own position and movements, and thereby about the things among which we move. Theoretically, they could even be dispensed with altogether.

But, of course, when we occupy a point of view and sense a visual field we do in fact also sense a somatic datum; and a change in our point of view, though it is in essence a visual change, yet is normally *accompanied* by a series of kinaesthetic data, and by a series of tactual ones belonging to the soles of our feet and to other parts of our body. Hence such and such a kind of kinaesthetic series comes to be associated in our mind with a particular kind of visual series involving a particular kind of change in our point of view. Apart from such visual associations we should, I think, find it extremely hard to recognize these kinaesthetic series and to distinguish them from each other, just as we find it extremely hard to recognize and distinguish the various sounds of a foreign language which we do not understand. And certainly we should find it extremely hard to describe in purely kinaesthetic terms the kinaesthetic data which we sense, say, in climbing a ladder.

However, the visual associations are as a matter of fact there —no doubt we spend much of our infancy in forming them—and since they are, we *can* often recognize a kinaesthetic series when its corresponding visual series is absent owing to darkness or some other cause ; and so we can use it as the sign for the change which our point of view *would* have been undergoing if we had been seeing views at all, and we can estimate what point of view we *shall* be at when sight is restored to us. In

fact, the main use of kinaesthetic data in this connexion is for tiding over gaps in our visual experience. But every one knows what gross mistakes we are liable to make in such cases, and how vastly even the faintest glimmer of visual experience improves our situation.

There is, however, another correlation, this time a purely visual one, which gives us important assistance in discovering that and how our point of view is changing. We saw that the primary way of doing this is by an application of the method of progressive adjunction. Obviously this is extremely long and laborious. But another procedure is open to us, happily described by Dr. Broad as 'following one's nose'.¹ We notice that as we pass from sensing a visual sense-datum which constitutes a particular part of our 'path' to sensing the one which constitutes the next part and from that to the next, the non-constructible members of the field simultaneously undergo a *progressive reduction of depth*, till they are succeeded by sense-data almost or quite within the completely stereoscopic class, which in their turn presently disappear and are replaced by other data. (For instance, as I walk along keeping my eye upon the trees or the fence, the distant spire which is also present to my senses 'comes nearer and nearer'.) This progressive reduction of depth can then be used as a sign for the progressive movement of our point of view over the earth's surface (or whatever we are moving over). And so habitual has our use of it become that it requires considerable pains to distinguish the *visible depth of a sense-datum* from the *physical distance* between our point of view and the material thing to which the sense-datum belongs. Also we are apt to think that when the depth of a sense-datum is reduced, we are actually moving towards it (or it towards us); whereas if the sense-datum is a non-nuclear one, we cannot possibly move *towards* it, since it has no position at all in the system of standard solids, by reference to which alone our point of view, and therefore our motion, are determined. All we can do is to move towards that standard solid with which it is 'eventually coincident'; and of this motion the reduction in depth is only the sign.

There is a more elaborate form of this procedure which we must mention. When we are moving over relatively large distances, or when our view is restricted by obstacles, there may be no one sense-datum whose depth progressively

¹ Cf. *Scientific Thought*, p. 306.

diminishes throughout our course (or no one series of con-familiar sense-data of progressively smaller depths). What we do is to choose another sense-datum which 'takes over' before the first expires. Before the sense-datum of the tree has reached its smallest depth, we find *another* sense-datum at as great a depth as possible, and estimate the distance and direction of the next stage in our movement by the progressive reduction in the depth of that ; when that in turn has reached its smallest depth we choose still another at a great depth, and so on. This procedure we may call the *Method of Key Sense-data* (as we speak of 'key positions' in strategy). The system of road-building supposed to have been used by the Romans, namely, using a distant hill as a mark to build towards, and when it was reached choosing another for the same purpose, provides us both with an instance and with an analogy. For we too, as it were, progressively build up in thought the road which we travel from the neighbourhood of one standard solid to that of another ; and having done so we use it, as they are supposed to have used theirs, to assist ourselves in 'mapping' these solids, inferring from their relations to it their positions with respect to one another.

There are indeed certain occasions in which this method is our *only* means, namely, when the surface over which we are moving is either invisible, as in a dark passage with a light at the end, or so homogeneous that we cannot distinguish one part of it from another, as in moving over a stretch of water ¹ In a similar way, change in the *sensible position* of a sense-datum when combined with decrease of depth corresponds to a change of *direction* in our movement, and is habitually used as a sign of it.

Is there anything in our tactual experience to correspond with point of view in sight ? We could, I suppose, speak of the *point of contact*, though this phrase is generally used in a purely metaphorical way. A certain observer's 'point' of contact at a certain moment would be, strictly speaking, not a point but a surface. namely, the surface of the standard solid of which some nuclear tactual datum sensed by him at that moment was a constituent. But the difficulty is that there might be many such solids. Thus I am now touching my pen, my desk, the chair on which I sit, and the floor on which my feet are resting—to say nothing of my clothes. And there is nothing in the

¹ Appeal to the heavenly bodies will not help us, for as their sensible depth does not alter, we cannot tell merely by looking at them whether we are moving towards them, or backwards away from them

tactual field to correspond with depth. Thus, strictly, we should have to speak of the *region* of contact, not of the point of contact. This region of contact changes from time to time, just as our point of view changes; and this, too, is a kind of movement, not merely of the organism but of the conscious subject himself. The distance and direction of the movement is determinable by progressive adjunction of successive tactual sense-data one to another; thus we call 'feeling our way along something'. And this tactual series, like the visual one, is accompanied by a characteristic kinaesthetic series, which accordingly becomes associated with it, and may be used as a sign to indicate what sort of tactual series we *might* have been sensing but are not (e.g. when we walk across an empty room in the dark) and to estimate what sort of tactual datum we shall experience later when touch again becomes possible (e.g. we shall touch the surface of the door). This 'tiding over' function of kinaesthetic data is more important in touch than in sight, though no more efficiently performed, for since depth is absent from tactual fields, there can be no tactual analogue of the Method of Key Sense-data. The most we can do is to fall back on that progressive increase and decrease in the intensity of sounds, smells, and thermal data which is found to accompany alterations of the observer's region of contact, using those data as our 'keys'. But it is obvious that in human experience at any rate (however it may be with dogs) they lack the delicate differentiation of visual data.

SUBJECTIVE SUCCESSIONS AND POSSIBLE SENSE-DATA

Hitherto we have been ignoring the temporal characteristics of sense-data. In particular we have ignored the fact that the sense-data which make up a single family are *not all simultaneous*. We cannot simultaneously sense even all the nuclear members of it, for to do so we should have to occupy many different points of view and 'points of contact' at once, situated all round the standard solid; still less can we simultaneously sense all the non-nuclear data in all their degrees of depth, size and distortedness. Indeed, it is quite rare to sense more than one visual member of the family at a time. Now from the fact that they cannot all be sensed simultaneously, it follows that they do not all exist simultaneously, for as we have shown, what is sensed is the whole somato-centric complex, and no sense-datum exists outside of such a complex.

Yet in spite of the successiveness of its members, we think that the family as a whole somehow remains unchanged as we change our point of view. For instance, as we walk towards and then round the table we sense a series of fleeting sense-data, different from each other in shape, size and sensible position. And yet we think that the spatial characteristics of the family somehow remain unaltered ; and that this succession and these differences in no way affect the shape, size, and position of a standard solid. We also think that the standard *colour* of each surface of it remains the same, though there is a succession of different sense-given colours as we walk to and fro, put on red spectacles, and so on.

It is true, of course, that the series of sense-data may be sensibly continuous for a considerable period. And we might imagine a kind of continuous colour-expanse growing longer and longer, and winding itself like a snake round a certain place as our point of view moves round the place. But this pleasing picture does not correspond to the facts. For as our visual 'snake' grows at one end it also shrinks at the other, and no more than a short stretch of it exists at any one time. In short, the successive sense-data do indeed overlap in time and are *non-momentary*, but they are none the less *short-lived* and *successive*. Thus this kind of sensible continuity does not help to solve our paradox, and indeed its importance has been greatly exaggerated.

Not only do we think that the family as a whole persists, despite the successiveness of its members. If that were all, it might be a series like a tune, which may be said to 'remain the same' through time, though its constituent notes are successive. We also think that it is in some sense or other a *whole of coexistent parts*. Thus we certainly think that all the sides of the standard solid are somehow contemporary (otherwise, indeed, it could not be called a solid at all), although the nuclear sense-data which constitute it are certainly successive. Thus our problem is, how can a succession of sense-data make us aware of a persistent whole of coexistent parts ? This is traditionally called the problem of *Subjective Succession*. (The name is not a good one, for it suggests that the sense-data do not really succeed one another, whereas they certainly do. 'Non-physical' or 'purely sensory' would be a better adjective.)

Now the obvious way of solving the problem is to bring in the notion of *possible sense-data*. A family, it may be sug-

gested, is really a persistent whole of *possibilities* ; it is only the *actualizations* of these which are necessarily successive. When I walk round the thing, there is a succession of *actual* sense-data, and the first member of the series is no longer actual when I am sensing the later ones. But it is still *possible*. And when I see the thing from a great distance, I cannot also be seeing it from a small one ; but the two views, though never simultaneously actual, are simultaneously possible.

Thus, according to this doctrine, the possibilities not only persist, but persist together through the same period of time. They are coexistent as well as persistent. And it would be said that the main use of actual sense-data is to indicate to us what sense-data are possible during a given period, and how those possibilities are related to one another. Thus a family would primarily be an ordered system of possible sense-data, some of which would happen to be also actual ; and the actualization of them, though of course essential to our *knowledge* of the family, would be inessential to the being and constitution of the family itself. A subjective succession, then, would be the successive actualizing of sense-data which are simultaneously possible.

It seems to me that this suggestion is fundamentally correct ; it gives the right account not necessarily of matter (as Mill thought) but of the nature and constitution of families, and of subjective successions. But it needs to be stated very much more carefully than Mill, for instance, stated it.

In the first place, it is not at all clear what is *meant* by 'possible sense-datum'. It might be meant merely that the qualities attributed to the sense-datum, say, redness, squareness and a certain visual depth, are not intrinsically incompatible with each other ('logical' possibility). Obviously this meaning is much too wide ; otherwise every sense-datum would be possible always and in all circumstances. But 'possible' has two other meanings. In both these meanings of it 'that A is possible' is an *incomplete* statement. To complete it (or rather to make it a significant statement at all) what we call a condition has to be mentioned. On the one hand, the meaning may be that *with regard to M*, A is possible : this is equivalent to saying that M does not necessitate the non-existence of A. Thus we say that fine weather is possible to-morrow, meaning that the presence of cumulus clouds in the sky this evening does not necessitate the non-occurrence of fine weather to-morrow. (Of course there may be something else which does, e.g. a fall of barometric pressure in the Irish Sea. Thus in this

sense, the same thing may be at once possible and impossible : possible with regard to M, but impossible with regard to another condition N.)

This, again, is not the sense required. For in this sense, as in the first, 'possible' only means not *impossible*. But plainly, when we say that sense-data of the back of the house are now possible, we mean more than that they are not impossible. As Mill has indicated, the possibilities which here concern us are 'not mere vague possibilities but conditional certainties'.¹ Our meaning is that the sense-data positively *would* exist if certain conditions were fulfilled. But even this is still too wide : for in this sense it would be true now in mid-winter that sense-data of green leaves and the smells of spring are possible, since they would certainly exist at this moment if the earth were at a different place in its orbit. But clearly, the actualizing of them would entail more than a merely subjective succession.

The obvious suggestion is that, in the sense which concerns us here, a 'possible sense-datum' is one which would be actual if certain events occurred in the *observer*. A sense-datum which is possible in this narrow sense we propose to call an *obtainable* sense-datum.²

But what kind of events in the observer ? It may be said, events in his body. But there are fatal objections against this. For so far we are only entitled to mean by 'his body' the thing to which a particular family of sense-data belongs ; and 'family of sense-data' is one of the very terms that we are trying to define. And if we try to say exactly *what* bodily events would be necessary, still worse awaits us. For these would include events in the percipient's brain, and since this is never actually present to our senses, the family of sense-data by reference to which we describe it will have no actual members at all. We can only describe it as the thing which could be present to our senses by means of 'such and such sense-data, namely, those which *would* be actual, if . . . if what ? Here we should have to refer to brains again (this time to our own), and the difficulty absolutely stares us in the face.

But might not the events be kinaesthetic sense-data ? Thus a sense-datum belonging to the back of the house is now obtainable, though actually it is the front which is present to

¹ Cf. *Examination of Sir William Hamilton's Philosophy*, p. 229.

² On the meaning of the phrase 'obtainable sense-datum', and on the sense in which we can say that 'there is' such and such a family of sense-data, more will be said in the following chapter. Cf. pp. 283-287.

my senses. Might not this mean that only the non-occurrence of a certain kinaesthetic series prevents it from being actual? But this will not do either. For what kinaesthetic series is it? How is it to be described except as the series which you would sense if you walked round to the back of the house? Thus all we are saying is that S would be actual if you sensed a kinaesthetic series such that S came at the end of it. Of course, if the kinaesthetic series could be described in purely kinaesthetic terms, all would be well. But for myself, I do not see how this can be done.

It is clear, however, that the events in terms of which 'obtainable' is defined must certainly be themselves sense-data.¹ But what sort of sense-data can they be, if they are not kinaesthetic ones? A much more promising suggestion is that they are simply those other visual data in terms of which *change of point of view* is defined. Thus, when I say that S is obtainable I really mean that *if I change my point of view* (or 'point of contact') in such and such a way, then a sense-datum of the S kind will exist and I shall sense it. As we have shown already, change of point of view can be defined in purely visual terms, without any mention of the observer's body or kinaesthetic data or volitions.

For instance, a sense-datum of the back of the house is now obtainable, though only the front is actually present to my senses. Let my present sense-datum be called A and the obtainable one S. We will suppose for simplicity's sake that both are nuclear data. What are the conditions on the occurrence of which S would be actual? Clearly, my point of view must so change that I sense a *progressive adjunction series* starting with A. If I do, I shall eventually sense S after so many steps in the series.

But really the occurrence of the progressive adjunction series and the change in my point of view are not two separate processes, but two descriptions of the same series of visual sense-fields. The occurrence of this series of sense-fields is the fundamental thing: it includes, along with much else, a change in my point of view. For change of point of view is only to be defined in terms of succession of visual sense-data. And within this particular series of sense-fields there will be included not

¹ The suggestion that they might be volitions is hardly worth discussing. For what should I will to do? Plainly, either to move my body or some part of it in a certain way, or else to initiate certain kinaesthetic sense-data. But when we try to say *What way*, or *What kinaesthetic data*, we get the same difficulties as before.

merely the progressive adjunction series $A \dots S$, but also some nuclear sense-data of small depth, by reference to which our 'path' from the first point of view to the final one can be defined. In this case the path will be a curved one. (The path-determining data might of course happen to be $A \dots S$ themselves—for the continued expanse which is the path need not be horizontal—but more probably they will belong to the surface of the earth.)

It is plain from this that one cannot just say 'S is obtainable if so and so'. One must mention some actual sense-datum, for instance A, from which the S-ward series can start. Otherwise there is no means of knowing what particular S is meant, e.g. what *particular* square red expanse among all the ones that it might be. The proper formula always is: *from A*, S is obtainable by such and such a kind of series (where 'A' is the name of a sense-datum now in existence, with which one is actually acquainted).

This is not merely equivalent to the tautologous proposition 'if there is the particular series AB, BC, CS, then S occurs at the end of it'. The meaning is: if there is a series of a certain *general form* wRx, yRy, yRz , for instance, a series in which each member is sensibly adjoined to, on one side of, and facing in a different direction from the one before: then given that *w* has the *determinate* value A, *z* will have the *determinate* value S.

There are, of course, several other general forms which the series might have. It might, for instance, be a progressive distortion series. Or S might be the more complex sort of progressive adjunction series which establishes the nature not just of a single standard solid, but of a whole system of spatially related standard solids: as where the sense-datum to be obtained would belong not to the thing which is now present to my senses but to some distant thing. In that case we can also use indirect methods, for instance, the Method of Key Sense-data.

There is a certain sense-datum A in my present visual field. If I sensed a series of fields such that A's depth continuously decreased, I should eventually sense a field containing a datum B. If I then sensed a series of fields such that B's depth continuously decreased, I should eventually sense one containing S. (There may be as many intermediate stages as we please; enough, for instance, to take us, in Mill's example, from London to Calcutta ¹)

It might be thought that two further conditions were

¹ *Examination of Sir William Hamilton's Philosophy*, p. 235.

needed, viz. 'if it remains light and if I continue in possession of my sight'. For certainly if I were overtaken by darkness or blindness, I should not eventually sense S. Now if these conditions could only be defined the one in physical, the other in physiological terms, this would of course be fatal. But they need not be so defined. All we have to say is 'if I continue to have any visual experience at all' or 'if I continue to sense visual data of *some kind*'; and this includes both the conditions mentioned. But, strictly speaking, there is no need to mention even this; for it is already included in 'if I changed my point of view thus and thus', since unless I am sensing some visual sense-data or other, I cannot be said to have a point of view at all.¹

Thus when we say that S is obtainable the suppressed conditional clause turns out to be of the following sort: if there occur visual sense-fields containing a series of sense-data which has a certain general form (whether the progressive-adjunction form or some other) and if the first sense-field both includes A and exists from point of view *p*: then eventually there will be a sense-field including S and existing from a different point of view *p'*. Accordingly it is quite correct to say that obtainable means 'obtainable by a change in one's point of view'. Only we must remember that this is equivalent to 'obtainable by a *spatial synthesis* of a definable sort', e.g. of the progressive-adjunction sort: all the *syntheta* being themselves sense-data, and the relation between any two which are in the same specious present being themselves sense-given relations.

This has the curious consequence that in the order of knowing *changing one's point of view* is prior to *being at a point of view*. For being at a point of view can only be defined by reference to a standard solid. Now it is only by a progressive-adjunction series that I can assure myself of the existence of a particular standard solid: but in the course of such a series my point of view necessarily changes.² Thus I first learn that there is a whole series of points of view, forming a certain sort of closed area all the way round the standard solid, and only then deduce from this that in such and such a sense-field sensed during the

¹ Alternatively, we may define the observer's change of position in terms of tactual sense-data which may or may not be eked out by auditory, thermal, and olfactory ones in the way explained above.

² Another way of putting this is to say that knowledge of a standard solid always requires a subjective succession, since I cannot be acquainted with all the constituents of it at once: but a subjective succession with regard to the solid is necessarily an objective succession with regard to my own point of view.*

progressive adjunction I must have been at such and such a point of view, say near one corner of the solid. Before that, I only know that the sense-field had a certain sensible pattern: I could not know *where* either its contents or its point of view was located, or indeed whether it existed from anywhere in Physical Space at all (it might have been a dream or vision, whose contents are nowhere and exist from no point of view). What we begin with is the simultaneous establishment of the existence of a complete standard solid, and of the occurrence of a certain *movement*¹ on our own part all round it.

A family, then, is a system of sense-data which are actual, together with others which are obtainable by changes in the observer's point of view or point of contact, and all alike related to a single standard solid in the ways which we have described. Now if after an actual succession of sense-data belonging to the family, the sense-data which are then obtainable are exactly like those which were obtainable before, the succession is a *subjective* succession; or as we had better say, an *extrinsic* one, extrinsic that is to the being and mode of constitution of the family, though not of course to the being of the actually successive sense-data, nor to the observer's point of view, which does actually change. If, however, the sense-data obtainable afterwards are different, it does not necessarily follow that the succession is an objective or intrinsic one; this it will only be if that kind of succession is *uniformly* followed by that kind of difference, whenever it occurs. Thus while I am walking round an object at a considerable distance, thereby obtaining a succession of actual sense-data, it may undergo some change of shape which I am 'too far away to see', and accordingly some of the sense-data obtainable after my walk (and those the most important ones) will be different from those obtainable before. But I may have walked round the thing dozens of times before, and sensed precisely similar successions without any such ensuing difference. Thus the succession was itself an extrinsic one, though it so happened in this particular case that an intrinsic succession took place at the same time.

It might indeed be held that a succession is only intrinsic if there is a difference in the *standard solid* whenever it occurs,

¹ Cf. what Dr C. D. Broad says about the 'Movement Continuum' (*Scientific Thought*, pp. 314 and following). But Dr. Broad, I think, regards this as primarily a kinaesthetic series, supplemented by certain visual data: the right view, I suggest, is the precise converse of this. Cf. above, pp. 255-259.

i.e. a difference in the obtainable *nuclear* sense-data. This seems to be a mistake, arising out of the use of the term 'objective'. It is quite true that there is no *physical change* unless there is a difference made in the characteristics of obtainable nuclear sense-data. But there may be a real change in the family none the less; for not all its members are nuclear and spatial characteristics are not the only ones which they display. Thus when a prism is introduced, there is a difference in the sense-data obtainable from points of view beyond the prism. Certain kinds of distorted sense-data were not obtainable from there until the prism was introduced, but now they are: and ordinary perspectified sense-data are now unobtainable from those places. There is a real change in the family, though there is no physical change and no change in the shape or situation of the standard solid. Again, when dusk comes on there is a real change in the family, sense-data of certain bright colours were obtainable before, but now cease to be so, and dimmer and dimmer ones are obtainable instead. There is not merely a succession of progressively dimmer *actual* data (perhaps no one is looking and there are no actual data at all). There is a change in the possibilities, that is, in the nature of the family itself, an objective or intrinsic succession. What has changed is the *standard colour* of the family, though the standard solid remains exactly as it was.

If this is what a subjective or extrinsic succession is, how are we to know that a given succession of sense-data is in fact subjective? If immediately after it was finished we examined all the members of the family and found that they were exactly like those obtainable immediately before, we could settle the question directly. But obviously we cannot, in fact, examine them *all* nor all at the same time, for there is no finite number of them. We can only take a random selection, and if they are exactly like their predecessors, we argue by analogy that all would be so if we actually obtained them. And commonly we do even less. We observe that subjective successions are accompanied by changes in our point of view or 'point of contact'; so when our point of view or of contact changes and a succession of sense-data of the same family, rank and sense accompanies this change, we infer that the succession is probably a subjective one.

We may note two further points. First, in defining subjective succession we have made no mention whatever either of the *will* or the *body* of the observer. Some philosophers

seem to hold that a subjective succession is to be defined as one which is preceded by a voluntary change in the position or state of the observer's sense-organs, and an objective succession as one not necessarily so preceded. This will not do at all. When I am carried round a house in a closed vehicle and can only see through a small hole, I sense a series of visual sense-data of the house which is certainly a subjective succession; for nobody thinks that the front door objectively precedes the back door or the kitchen window. But there is no *voluntary* change in the position or state of my eyes. I am not driving the vehicle; and perhaps even the driver himself cannot control it, so that even his sense-data are not consequent upon an act of will.

And if we leave out the will, and define a subjective succession as one preceded by a change in the state or position of the observer's sense-organs whether voluntary or not, we are not much better off. For we have still to explain what a change in the sense-organs is, and this we cannot do without a fallacy. At this stage of the argument, 'a change in a sense-organ' can only mean a succession of kinaesthetic sense-data. And how are we to know whether this succession again is not a subjective one? If we answer by referring to a change in some other sense-organ or in our brain, then (as we saw above) we simply raise the same question again. If, on the other hand, we do know that a certain part of our body, which is a material thing, has suffered a *physical change*, how have we discovered this? We can only discover it if we *already* know the difference between subjective and objective successions: without this knowledge we cannot know that the series of kinaesthetic data is an objectively successive series belonging to a changing piece of matter. Further, if we are capable of knowing that our eye or brain is suffering a physical change, we are *already* capable of knowing that other material things are or are not suffering them. Our knowledge of our sense-organs and brains and of their changes is in no way logically prior to our knowledge of other objects. Indeed, we quite often argue in just the opposite way, from a succession known to be subjective to an otherwise unknown change in one of our sense-organs: as when from a sudden dimming of the field of vision we infer that our eyes are going wrong.

Secondly, we may observe that there are cases in which the same series of sense-data is both a subjective and an objective succession at once, subjective with respect to one family and

objective with respect to another. Thus when I feel all over a rock with my hand, the series of tactual sense-data which I sense is a subjective succession with respect to the rock, but an objective one with respect to the hand.¹ In the family of tactual data belonging to the hand there really is a difference made: the standard solid has changed its position and its shape. But in the family belonging to the rock there is no change, although both families have the same members. Indeed, since all tactual data are also somatic, there is never a tactual succession which is only subjective; it is always objective as well. For this reason the terms 'extrinsic' and 'intrinsic' seem preferable to 'subjective and objective'. Extrinsic and intrinsic are quite obviously *relative* terms, and it is manifest that the same series may have both predicates at once, being extrinsic to A and at the same time intrinsic to B. But when we say that it can be both subjective and objective at once there is a needless appearance of paradox.

We can now advance a little further in our analysis of the relations which subsist between sense-data belonging to the same object. It is clear that, although we cannot see both sides of a large object at once, yet when we go round to the back we are convinced that the front is still there. Can we state this conviction in terms of sense-data and their relations? Obviously we cannot say that the two sense-data, the one 'of' the back and the one 'of' the front, are contemporary; for they can only be obtained successively and therefore cannot exist at once. What we can say is that although at a certain time both cannot be obtained together, yet *either is obtainable*: they are not contemporary existents, but they are contemporary *alternatives*. We may express this by calling them 'equipossible'. Obviously not merely two sense-data of the same family are equipossible at a given time, but indefinitely many. And we know that they are all equipossible if we find that when they are successively brought into existence, the succession is a subjective or extrinsic one, in the sense defined above.

There is here a complication arising out of what we should commonly call 'the fact that light has a finite velocity'. Doubtless this fact can only be discovered at a much more advanced stage than we have yet described. One needs first to have established the existence of vertical causality, i.e. to

¹ It was pointed out above that a subjective succession of visual data is also an objective succession with respect to our point of view.

know that any material thing is a part-cause of the sense-data belonging to it. And we already know a great deal about the material world before we establish that.¹ But it does not matter how we come to be able to discover the fact that light has a finite velocity of transmission. What does matter is that, being an experimental fact,² it is primarily a fact *about sense-data*: whatever physical hypotheses (with regard to electromagnetic waves, etc.) we may introduce in *explanation* of this fact, and whatever previous physical knowledge may be necessary if we are to discover it. And we may state it as follows: two visual sense-data of the same family are not contemporary alternatives unless the points of view from which they are obtainable are at the same distance from the standard solid of that family; if one point of view is more distant than the other, its sense-datum will be the later of the two alternatives, and the greater the difference between the distances, the longer the temporal interval will be. In the same way what we call the fact that a light ray is bent by a prism is primarily the fact that there is a certain series of points of view from which sense-data of a particular family are obtainable, that these points of view are situated at successively greater distances from the standard solid, and that they do not lie upon one straight line, the line upon which they do lie being bent at the place where the standard solid of the prism is

We can now advance a step farther. We can state those facts about sense-data which lead us to believe that the thing to which they belong *endures through time*. Now the family of sense-data is not, of course, itself a particular existent, nor a set of particular existents. It is a system of possibilities, some of which are on occasion actualized, but never all. It cannot then be said to endure in the way that particular existents do. Yet it does something rather like this. For in whatever sense

¹ Cf Chapter X, below. The whole subject is thoroughly dealt with by Dr Broad in *Scientific Thought*, pp 376-386.

² The experimental evidence for it is of the following sort. In the case of the family which constitutes what we call a flash, we notice that a sense-datum is obtainable from a point of view *p* very near the standard solid some time *before* any member of the corresponding mirror-image group is obtainable and that the farther the mirror is from *p*, the greater the interval. Having already established that both mirror data and non-mirror data are causally dependent on the thing, and dependent on it in an analogous way, we argue that analogously normal (non-mirror) sense-data, too, are later in time, the greater the distance between our point of view and the thing to which they belong.

'there is' a certain family at a certain moment, in precisely the same sense it is often true that 'there is' that same family at earlier and at later moments. Thus a family can be said, if not to endure, at any rate to *prolong itself* through time. There is not only one set of equipossible data constituting the family, but a succession of such sets each having its proper date. And the succession may extend through a long period, in some cases through many ages. When a family of sense-data thus prolongs itself through a certain period we believe that the thing to which they belong endures through that period. And even if during a certain part of the period no member of the family is actually obtained, it still remains true that at its proper date each set of data was obtainable.

Again, the family may be said if not to change at any rate to *differ* at different times. The set of equipossible data obtainable at time t often differs from the set obtainable at t_1 . Of course this is not necessarily a difference within one and the same family. It will only be that, if at intermediate times there are other sets obtainable, intermediate between these in respect of the shapes, sizes, positions and qualities of their several members. But when the condition is fulfilled we regard the two sets as two different stages or episodes in one continuing family-history; and we believe also that there is one enduring object which has changed. (Differences in the shapes, sizes and positions of the standard solid are the most important for our purpose.)

Let us sum up the progress we have made so far. In the process of gaining perceptual assurance with regard to the existence and nature of a certain material thing we are obviously discovering (among other things) certain relations between sense-data. It is clear, in other words, that all the sense-data which belong to the same material thing are related to each other in certain ways. How are they related to each other? Not merely as co-members of the same class, nor as co-members of the same gradual transition series, but as co-members of the same *family*. A family is a group of sense-data, actual and obtainable, consisting of a standard solid together with an indefinite number of distortion-series. It is primarily visual and tactual, but sense-data of other kinds are also included in it. We must next enquire what is the relation between the family and the material thing, and whether this relation throws any light upon the relation of 'belonging to'.

CHAPTER IX

THE RELATION OF SENSE-DATA TO MATTER

WE have now before us a system of families, spatially ordered and prolonging themselves through time. Does not this system of families look uncommonly like that system of material things which we call the External World? When we gain perceptual assurance with regard to the existence and the nature of a certain material thing, e.g. a table, are we not simply becoming assured of the existence and constitution of a certain family of sense-data—of this and nothing more? And when—to use the language of Kant—we refer presentations (that is, sense-data) to an object, does not this simply mean that we discover them to be members of a certain family of sense-data? Thus the relation called ‘of’ or ‘belonging to’ would simply be the relation of *family-membership*.

This suggestion is a plausible one. There is no doubt that a family does resemble a material thing in several very important ways.¹

(1) Each family necessarily has a standard solid possessing all those *spatial* characteristics which common sense attributes to a material thing. And it remains identical through *time*, as a material thing is expected to do.

(2) There is no reason why the family should not include sense-data sensed by many different observers. When I am sensing one sense-datum the other sense-data in the family are to me merely obtainable. But though they are to me merely obtainable, not actually obtained, since I cannot be at several points of view at the same time, perhaps they *are* being obtained by other minds; there may be other minds at those other points of view, though I myself cannot be at them. And there is no reason why there should not be the same kinds of relations between sense-data simultaneously actual, as there are between sense-data which are successively actual (though simultaneously

¹ On the essential marks of material thinghood, cf. above, Chapter VI, pp. 145–6.

obtainable). To be sure, there cannot be the same kind of relations between a sense-datum of mine and one of yours, as there are between two sense-data in one sense-field. But then the relations constitutive of the family are in any case relations which 'cross over' from one sense-field to another. And that being admitted, there is no reason why each of the several sense-fields should not be sensed by a different mind. Thus the family is something *public* or common to an indefinite number of observers.

It may indeed be thought that there is a contradiction here. Is not each sense-datum private to the mind that senses it? And does not 'private' mean knowable only to one mind, and 'public' knowable to many minds? How, then, can there be a public system entirely composed of private entities? The answer is simple. The term 'knowable' is ambiguous. We have to distinguish knowing by acquaintance from knowing in other ways. It is true that each actualized member of the family is 'private' in the sense that only one mind can be acquainted with it or intuitively aware of it. But though only one mind can be acquainted with it, another mind can perfectly well know it *by description*, i.e. can know what characteristics it has. Thus if I see the inside of the door while you see the outside, I can know that your sense-datum is the sort of one that I should be sensing, if my point of view differed in an assignable way from what it now is. And you can know the same about mine.

(3) We have seen already that a family includes sense-data of all the different senses, not merely visual ones. It is therefore *neutral* as between the different senses, though each of its members is of course accessible to one sense only.

(4) There is an important sense in which the family is not *dependent* upon any one observer, nor upon all of them together. The members of it are still obtainable even where none of them is actually being obtained by any one; not only so, they are still obtainable even if no one at any time actually obtains any of them. The qualities and relations which those obtainable at any one time *would* have if obtained are perfectly definite, whether they are actually obtained or not; and those obtainable at different times differ in perfectly definite ways. It is true that sense-data when they actually exist are mind-dependent events. Therefore facts about sense-data, e.g. that they can be obtained thus and thus, do imply certain propositions about observers. But this does not make these facts

dependent upon observers in the *epistemological* sense of 'dependent': like other knowables, they 'are' whether any one is aware of them or not. And further, they do not presuppose the actual *existence* even of one observer. For they are the sort of facts which can only be stated in hypothetical statements¹ of the form: 'If there is an observer at such and such a point of view, he will sense so and so.'

Families, then, do resemble material things in a number of ways. Nevertheless, when we are perceptually assured of the existence of a certain material thing, it is not really true that we are merely being assured of the existence of a certain family. A piece of matter is not merely something shaped, enduring, public, neutral, and independent of observers. It is also something more. This may be easily seen, and with the least risk of unconscious question-begging,² if we consider what is meant by saying that a place or region is *physically occupied*. The fact that a place or region is *sensibly* occupied by a certain family does not by itself necessitate that it is physically occupied as well. For that, something more is wanted. Certain *causal characteristics* must also be manifested there; and in particular, the place or region has to be what is called impenetrable.

How do we know that a certain region or place is impenetrable, that the universal 'impenetrableness' (if this way of putting it be preferred) is actually exemplified there? Some would make a great mystery of our consciousness of impenetrability or 'resistance'; but only because they think it has something to do with our will, or with our muscles or with both. But there is really no mystery at all, and neither the will nor the muscles have anything to do with the matter. A purely contemplative being having the sense of sight and an intelligence such as ours, but completely devoid of either will or muscles, could perfectly well be conscious of impenetrability just as we are.

For instance, we are sure that a certain stone wall is impenetrable. How are we sure of this? Let us first state the answer

¹ Such facts are sometimes called hypothetical facts. This suggests, however, that there are not actually these facts, but would be if certain conditions were fulfilled: whereas there is really nothing hypothetical about their *facticity*, but only about their *content*. The sensings and the sense-data may be called hypothetical, if we like. That they exist if the observer is at such and such a point of view is, however, just a ~~fact~~ fact—whether they actually do exist or not.

² Cf. below, p. 280.

in everyday language. It is because from time to time we see all sorts of things moving towards the wall (for instance, twigs, chestnuts, rain-drops, tennis-balls, stones), some falling from above, some moving horizontally from various directions; and we see them coming into contact with it. When they do so, we notice that they all *change their mode of movement*: they rebound, or stop, or break into bits. Further, we notice that if anything does get to the other side of the wall (for instance, a bird, or a leaf blown by the wind), it only does so by changing direction and going round the 'obstacle'.

Now all these occurrences are observed sequences. It must therefore be possible to describe them in terms of sense-data and of families of sense-data. Let us try.

In this connexion it is the nuclear sense-data (composing the standard solid) which are of fundamental importance.¹ If no family had any constituents but these—if there were no perspectival or other distortions—we could still be aware of impenetrability and of the other main causal characteristics of matter. The other constituents, though real enough and interesting enough in other ways, are here only important as signs of the nuclear ones. For the present then we shall attend mainly to sets of nuclear data and neglect the others.

Now it is obvious that every family does include a set of actual and obtainable nuclear data: this follows from the very definition of 'family'. This set, like the family as a whole, is situated in space and prolongs itself through time. Indeed it has, so to say, situation *par excellence*, since it is only thanks to it that the family as a whole can be said to be located at all. And as the whole family displays a peculiar kind of unity which is not that of a single sense-datum, nor yet (as we shall see) that of a material thing, so, too, the nuclear set displays its own peculiar kind of unity which is distinct from all these three, but is none the less a perfectly genuine and very well-known kind of unity. But it is a less complex and, so to speak, a less 'ragged' or more 'smooth' sort of unity. In respect of spatial characteristics its unity is more *intimate* than that of the family as a whole (indeed were it not for this more intimate unity the family as a whole would have no unity at all). For all the members of it at any one moment fit together to form a single three-dimensional whole. While if we consider the history of the set through a period of time, we find that this three-dimensional whole either remains the same throughout, or if at

¹ Cf. the *Method of Indispensables*, Chapter V, above, pp. 86-9.

different times there are differences in respect of shape, size, or position, at any rate they are continuous ; so we can say that one single solid remains throughout the period. In respect of its general manner of being, i.e. of the sense in which we can say that 'there is' this set even though not all its members are actual, it is of course exactly similar to the family as a whole.¹

This nuclear set, as we have seen, contains tactual as well as visual members. And it is a centre of maximum intensity for sounds, smells and thermal data. We have tried to indicate its relation to the whole family whose nucleus it is by calling it the standard solid. But we are now going to ignore the other constituents of the family, so for the time being this relation does not concern us. We are to consider simply the nuclear set itself and its relations to other like sets, neglecting its 'standard' character. Accordingly we need a new name for it which shall indicate simply its own nature and constitution. Let us call it a *visuo-tactual solid*. It is clear that a certain visuo-tactual solid is part at least of what is presented to the mind by the sense-data which belong to the thing : and part at least of what is verified in the process of mutual confirmation of perceptual acts is that 'there is' this solid, having such and such a shape, size and position. Nor is there anything mysterious about the manner of its presentation : it occurs inevitably in the course of the process of spatial synthesis, by which our awareness of the family is built up.

Now when we say 'there is a stone wall here' the first thing we are sure of is that there is a family of grey sense-data having a more or less flat-sided visuo-tactual solid for its nucleus. (A merely visual solid would do for our purpose. But in point of fact it does happen to contain tactual sense-data too.) Let us call this family F_1 and this solid Σ_1 . And when we say that a chestnut falls on to the wall, the first thing we are sure of is that there is another family F_2 having a different visuo-tactual solid Σ_2 for its nucleus. We have already explained what is meant by saying that families prolong themselves through time (cf. p. 272, above). Now in this case the family F_2 is prolonging itself in such a way that its visuo-tactual solid is in different places at different times, i.e. in such a way that we take the object to be moving. We can hardly say that the family itself moves, since it is not a substance. Let us say that it *prolongs itself from one place to another*. And it *prolongs*

¹ On the sense in which 'there is' a family of sense-data, more is said below, pp. 283-7.

itself towards the place where Σ_1 is, until at last Σ_1 and Σ_2 are in contact ; 'contact' being understood as a (perhaps infinitesimally enduring) conjunction of the two families, such that for a time—however short—there is a compound family having a compound nucleus composed of Σ_1 and Σ_2 together. When this contact occurs, we find that F_1 's mode of self-prolongation is abruptly altered. It does not prolong itself *into* the place where Σ_1 is and out the other side (as it would have if F_1 had been a mere apparition) but only up to it¹ ; and it thereupon begins to prolong itself in quite a new manner and usually in the opposite direction. When this happens on various occasions with various sorts of 'foreign' families on their prolonging themselves up to the place where Σ_1 is, we say that the place where Σ_1 is situated is *impenetrable*.

This term indeed is not strictly accurate. No visuo-tactual solid, at any rate none large enough to reveal itself to human senses, occupies a region which is absolutely incapable of being penetrated. For instance, a bullet can penetrate a stone wall ; here as far as sense-given characteristics go (and it is of solids whose constituents are *sense-data* and of sensory occupation that we are now speaking) there is no doubt at all that part of the region occupied by the one visuo-tactual solid has come to be occupied by the other. We usually believe, indeed, that if our senses were more acute this would not be so ; and that we should then be made aware of visuo-tactual solids occupying absolutely impenetrable regions. But this, after all, is mere hypothesis. All we are entitled to assert categorically is (1) that most regions occupied by visuo-tactual solids are impenetrable to *some* other visuo-tactual solids (many to nearly all) ; (2) that in most regions occupied by visuo-tactual solids penetration is *resisted* even when it does actually occur—the manner of prolongation of the other family altering upon contact even though the direction of prolongation does not. In view of these facts, it might be better to speak of *resistance*² or *obstacularity* rather than of impenetrability ; but the word 'impenetrability' is in common use and is not likely to mislead.

We often find that foreign families change their mode of

¹ The two visuo-tactual solids are *conjoined*, but they are not *fused*.

² The objection to 'resistance' is that it suggests some reference to our *will*, or at any rate to the sense of touch. But we could be aware of changes in the mode of prolongation of families even if we had no will at all. we do not even need the sense of touch to tell us that there are families prolonging themselves in various ways.

prolongation in other ways as well, when they reach a region in which a visuo-tactual solid is ; for instance, they alter in shape or size, or break up into a number of smaller families, or even disappear altogether (as the family of sense-data of a piece of wax does when brought into contact with the visuo-tactual solid of a red-hot poker). Certain of these changes even occur at some distance from the visuo-tactual solid, growing greater and greater as the solid itself is approached : in that case the region where it is situated is the centre of a ' field ' of some sort, for instance, of a magnetic or a gravitational field. There are also what we may call temperature fields. In these not only can we feel thermal data belonging to the family which occupies the centre of the field. We also find that foreign families of sense-data suffer certain characteristic changes when they enter these regions. They come to include new thermal data hotter or colder than they included before. And their visuo-tactual standard solids also suffer changes of shape and consistency such as are described by words like ' melting ' or ' bending ' (with corresponding changes in the non-nuclear parts of the family). In some cases the intruding family is even annihilated : i e. no more sense-data of that family are obtainable at all.

Now when changes of these various kinds uniformly occur in the mode of prolongation of various other families on their prolonging themselves up to the region where a visuo-tactual solid is, this is what we mean by saying that the region is *physically occupied*. And exactly similar arguments will apply to these other families too. Each of these includes a visuo-tactual solid which is the standard solid of that family, and the region where this at any moment is, will be at that moment impenetrable and will be the centre of a physical field. Then these regions, too, are physically occupied.

Incidentally we can now explain why touch is commonly considered more important and more trustworthy than sight, and why Dr Johnson thought he could prove the existence of matter by kicking a stone.¹ For touch not only reveals sense-

¹ Cf. the following story about Wordsworth, as reported by Professor Bonamy Price. (A E Powell *The Romantic Theory of Poetry*, p. 138) ' He was walking in the middle and passed before me to a five-barred gate in the wall. . . He clenched the top bar firmly with his right hand, pushed strongly against it, and then uttered these ever-memorable words : " There was a time in my life when I had to push against something that resisted to be sure there was anything outside me. I was sure of my own mind : everything else fell away and

data having sensible size, shape and position, and a particular sort of qualities (pressures or prement expanses); it also suggests, and tactual synthesis may confirm it, that a particular region is *impenetrable* to a certain family of sense-data, namely, to the family belonging to the observer's own body.¹ We must not, however, suppose for a moment that *all* our knowledge of physical occupiedness comes from touch. Touch gives it to us more rapidly and simply; but in actual fact the far greater part of it comes from sight. And it is certain that a purely visual being could discover all those facts that we have been describing.

This, then, is what we mean by saying that the place where a visuo-tactual standard solid is situated is physically occupied. But physically occupied by what? What is that something in whose neighbourhood and upon contact with which foreign families uniformly suffer such and such changes in their mode of self-prolongation? The natural answer is, this something is the *physical object*, and impenetrability, magnetic attractiveness, etc., are its *causal characteristics* or 'powers'.

This, we maintain, is also the right answer. But before accepting it, we must consider two other suggestions.

First, it may be said that the inference from 'the place *p* is physically occupied' to 'there exists a something which physically occupies the place *p*', though grammatically plausible, is not really valid. All we know, it may be said, is just that the place is physically occupied: and this means that such and such changes uniformly occur at its boundaries and in its neighbourhood, changes which do not occur in and around other places not filled by visuo-tactual solids, and which serve therefore to differentiate it from those other places. That certain places (where visuo-tactual solids are) are thus physically occupied is upon this view just an ultimate fact about them; and to seek to explain this fact by introducing physical occupants is simply a piece of gratuitous metaphysics.

But this amounts to saying that *a place can have causal characteristics*. For if in the immediate neighbourhood of vanished into thought." (One fears that Wordsworth assumed that because he was *acquainted* with sense-data, they must be psychical events)

¹ As we have seen, there is only one *somatic* datum (datum of 'bodily sensation') belonging to his body at any particular time. Thus there is no family of somatic data. But visual and tactual data belong to it as well, and they do form a family.

every A certain changes uniformly occur in other entities which do not occur elsewhere, and nearness to an A is the only circumstance common to all the cases where they do occur: then A causes them, i.e. A has certain causal characteristics. (According to the Uniformity view of causation, this is an analytical proposition; according to the Activity view, it is a synthetic one. We need not here decide between these views.¹) Now it is very odd to say that a place or region has causal characteristics. And though certain modern writers actually seem to say this,² it is obvious that they are changing the ordinary meaning of the words 'place' and 'region' in doing so. If a region has causal characteristics, it is a substance, and not simply a region: and since the causal characteristics are physical, it is a *physical* substance. Thus the existence of physical objects is not being denied, but affirmed, and it is only the language that is being altered. The only advantage of this alteration (in most ways very confusing) is that it makes us more agnostic about the *intrinsic qualities* of physical objects than we are usually inclined to be. And no doubt this is salutary; but the advantage can quite well be got in a less violent way.

Secondly, it may be thought that when a place or region is physically occupied (in the sense explained), what occupies it is just the family of sense-data which is situated there, or that visuo-tactual solid which is the standard solid of the family. (It does not matter which we say, for the family as a whole is only situated in the place because its visuo-tactual standard solid is situated there. Thus if the family is the physical occupant, it only is so in so far as it possesses a visuo-tactual solid for its nucleus.) Of course we should still have to *distinguish* between sensible occupation and physical occupation. A place is sensibly occupied when mutually unfamiliar sense-data exist there and are obtainable there. It is physically occupied when foreign families of sense-data suffer

¹ It is necessary for us to maintain that the terms 'cause' and 'causal characteristic' have *some* meaning. But it does not matter to our argument what the right *analysis* of their meaning is.

² Sometimes regions of space-time are substituted for region of space, and singularities in their geochronometry for causal characteristics. But this seems merely to mean (1) that the Uniformity Theory of causal characteristics is preferred to the Activity Theory (2) That the causal characteristics in question can be described by formulae appropriate to a certain non-Euclidean system. It is still the same causal characteristics that are being described.

changes at its boundaries or in its neighbourhood. But the suggestion is that one and the same entity, namely the family, is capable of occupying a place in both of those ways at the same time.

This amounts to identifying the material thing with a family possessing causal characteristics (or with a visuo-tactual solid possessing them) ; whereas the ordinary view, as we shall show later, is that a material thing consists of *two different elements in conjunction*, on the one hand a family of sense-data, on the other hand a causally-characterized physical entity, or physical object.¹ But the present suggestion is that there are not these two elements : that there is only the family of sense-data, and physical occupancy is one of its properties. Thus the material world would be a system not indeed of mere families (as was suggested above)² but of causally-characterized families. This doctrine is conveniently called *Phenomenalism*. It is what J. S. Mill would have arrived at, if he had worked out in full detail his dictum that matter is 'a permanent possibility of sensation'. (In actual fact he never reached the conception of a family of sense-data, without which it cannot be worked out)

The doctrine is extremely plausible. After all, it is certain that there are families : that the causal characteristics in terms of which physical occupancy is defined really are manifested : and that they are manifested in and around the places where families are situated. What could be more natural than the suggestion that the families are the subjects of these characteristics ?

Moreover, Phenomenalism has the great advantage of economy'. It does not ask us to accept the existence of anything which we do not already and in any case know to exist. The only particulars in whose existence it asks us to believe are sense-data ; and it is quite certain that there are sense-data. Yet on the other side we could not fairly say that it just identifies matter with sense-data ; at least this statement is so vague as to be seriously misleading. For the theory is very far from saying that a sense-datum is a material thing. What it says is that a *system* of sense-data is a material thing ; and

¹ Thus 'material thing' and 'physical object' are not synonymous expressions. The material thing (or 'material object') *contains* the physical object, but is not identical with it. For it contains the sense-data as well. This terminology is due, I think, to Professor G. F. Stout. Perhaps it would be better to speak of the *total object* rather than the material object.

² Cf. p. 272, above.

not any system you like, but that very special sort of system which we have called a family—a system, too, which contains obtainable sense-data along with actual ones. The causal characteristics necessary to matter, e.g. impenetrability, belong according to it not to any single sense-datum, but only to the whole family collectively (The like is true, as we have seen, of other physically important characteristics, viz. three-dimensional shape, location in public space, and objective or intrinsic successiveness)

We must notice, further, that the theory is not idealistic in any objectionable sense. As we saw before, the system of families is what it is whether any one thinks of it or not: our thinking neither makes it nor affects it, but simply discovers it. And this does not cease to be true when causal characteristics are attributed to families. No doubt sense-data are only actual when sensed, though quite independent of thinking. Yet they do not cease to be obtainable even if no sentient actually obtains them, and for the existence of a family only their obtainability is required, not their actuality.

Now it seems plain that if a family is that sort of entity which could *conceivably* have causal characteristics, if it is 'logically possible' for it to have them, if the having of them is not incompatible with a family's being that sort of entity that it is: then there are strong reasons for thinking that families do in fact have them, i.e. are material things, physically occupying the places where they are sensibly situated. Thus the main question which we have to ask is, what exactly is meant by saying that 'there is' a certain family; what 'mode of being' has it? Is its mode of being such as to be compatible with the possessing of causal characteristics of the sort which we actually find to be manifested? With this another question is closely connected. what kind of *unity* has a family, and in what sense can it be said to be a whole?

First, let us consider whether a family can be said to 'be' in that straightforward sense in which an actual particular or a collection of actual particulars can be said to 'be': e.g. an actual sense-datum, or again the collection of all the actual sense-data which are sensed by a collection of observers who are all looking at a rock from different sides. When we say of such an actual particular or collection that 'there is' that particular or collection, our meaning is obvious, though we cannot do much by way of further explanation of it; we just mean that certain universals are actually exemplified.

Now, can a family be said to 'be' in this primary and straightforward sense? We might be tempted to think that it can. We might think that it was simply a complicated group of existent particulars having a certain sub-group of particulars for its nucleus. And if this were true we might plausibly enough say that a tobacco-tin (for instance) is simply the family of sense-data which would ordinarily be said to be 'of' the tobacco-tin, namely a family having a standard solid of a hollow cylindrical shape, which stands in certain relations of size and of position to other standard solids. No doubt this, or something like it, is the real meaning of Mr. Russell's much criticized dictum that 'the thing is the whole class of its appearances' (only he should not have expressed his view in this circular way, and 'family' should be substituted for 'class').

But unfortunately a family is not just a group of existent particulars. To say it is, is to go back to the Selective Theory which we have long ago rejected. And we must beware of confounding two antitheses: that between *sense-data* and *sensibilia*, and that between *actual* and *obtainable sense-data*. Both sense-data and sensibilia are existent particulars¹: the only difference between them is that those are sensed and these are not. But although actual sense-data are of course existent particulars, obtainable sense-data do not exist at all. Indeed, 'obtainable sense-datum' is not really a possible subject of predicates. 'That an obtainable sense-datum is round and red' is not really a statement at all (though it looks like one) and is neither true nor false. What we really mean when we utter these words is *that a round and red sense-datum is obtainable*; and this is a statement, and is often true. Thus a family of sense-data is a very curious sort of group. It is not at all the same sort of group as a family of human beings or a planetary system. It is what we may call a *heterogeneous* group; some of its members are existent particulars (actual sense-data) and the rest—the vast majority—are *facts or truths* of the form 'if any observer were at such and such a point of view such and such a sense-datum would exist', and those facts are facts, or these truths are true, whether any observer actually is at that point of view or not. Alternatively, we may say that it is a homogeneous group composed not of existents at all, but wholly of facts or truths; some of them being truths about actual sense-data, and some being of the

¹ I am not of course saying that there are sensibilia. I am only saying what the term 'sensible' means:

form 'if any observer, etc.' Even so there is still heterogeneity, not indeed as between the members of the group (which will then be all facts or truths) but as between the subjects which they are facts about.

Whichever alternative we choose, it is perfectly clear that a family cannot be said to have the same mode of being as a particular existent (e.g. a sense-datum or a mind) nor as a collection of such existents.

Nevertheless, we must not think that they have no mode of being at all, i.e. that the statement '*there is* a family situated in such and such a place' is always simply false, still less that it is meaningless. For it is perfectly clear that in some good sense there really *are* families, that they are really situated in space and prolong themselves through time. Further, the kind of unity which a family has is clearly not the kind that a single particular has, nor the kind that a whole composed of particulars has; yet we must insist that it is *a* kind of unity, and a kind which is very well known to us. There is no reason to suppose that all the entities which we know by means of the senses must be either single particulars, or wholes composed of such particulars. The world is not so simple as that, and would be less worthy of our study if it were.

The mode of being which a family has will perhaps be clearer if we consider exactly what we are believing when we believe that during a certain period there is *something coloured* in a certain place (of course it is also something with a three-dimensional shape), e.g. that there is something red and cylindrical on my table all this afternoon. We do not mean that there is a single sense-datum there, for no sense-datum endures for more than a few moments. We do not mean that actual sense-data are occurring in that place throughout the afternoon. For we believe that in some sense '*there is*' this something coloured, in the place even at times when our eyes are shut or our backs turned, and even when no one is in the room at all. We also believe that it is accessible to many different observers. Thus it is not an actual sense-given particular (though such particulars are contained in it) nor a group or series of them; and yet we have to admit that in its own peculiar way it '*is*' throughout the period in question. Even at those moments when no sense-data of the family are actually in existence, it would be very misleading to say that there is *nothing* in the place where the nuclear sense-data of the family (when they do exist) are wont to be situated. The

place is not simply empty or unoccupied, though of course it is empty of actual sense-data ; it is still differentiated from other places in a perfectly definite way, by the fact that sense-data of a particular sort are persistently obtainable there, and intermittently actual. This peculiar manner of being, which the something coloured has, is difficult to grasp, though we are perfectly familiar with instances of it : for when 'there is' a something coloured existing in a place throughout a period, there is always something more, namely, a physical object. Nevertheless, it is possible to isolate the coloured something in thought and to distinguish it from the physical object which occupies the same place ; and it is nothing else than what we have been calling a family of visual sense-data.¹

The point may be clearer if we refer back to the further-specification process by which an act of perceptual acceptance is confirmed. In this process, we begin by taking for granted the existence of something which is *spatially complete*, which *endures through time*, and which, further, has the *causal characteristics* proper to a material thing. Suppose that during a certain period further perceptual acts occur, which are such as to confirm the spatial completeness and the endurance through time, but that the presence of the appropriate causal characteristics is as yet neither confirmed nor refuted. When there is such *partial confirmation* (so much and no more) of the reality of a perceptually accepted thing, and when it comes by means of visual data, then there is the consciousness of what "we are here calling something coloured ; the successive sense-data actually presented in the course of the confirmation being constituents of it. (That others confamiliar with those are obtainable—though not actual—is part of what is confirmed ; these actual ones, if we may say so, do the confirming)

In the language of some writers, we may say that a family is a peculiar kind of *construct* ; meaning by this, first, that it contains within itself a number of elements (united in a peculiar way), secondly, that it is known to us not by acquaintance or intuitive apprehension, but by an activity of 'synthesis' or 'construction', i.e. by recalling and holding before the mind a number of data successively and separately presented and then recognizing that they form a whole of a certain kind.² (Such

¹ Dr. Broad calls it 'a complete optical object' (*Scientific Thought*, p. 329). But it seems desirable to reserve the name *object* for what is physical, if we can.

² This is the process described by Kant in the *Critique of Pure Reason*, particularly in the *Deduction of the Categories*, first edition version

synthesis or construction is not of course a form of making, but of discovery. There are these unitary wholes of sense-data whether we discover them or not. To that extent words like 'construction' and 'synthesis' are misleading, and perhaps we ought rather to speak of *syngnosis*.)

This, then, is the sense in which we can say that 'there are' families, and this is the kind of unity that a family has. We have now to ask whether, having this mode of being and this kind of unity, a family is the sort of entity to which the causal characteristics which we actually find to be manifested could conceivably belong? We shall try to show that it is *not* the required sort of entity and that accordingly Phenomenalism is false.

We may most easily see this if we consider more accurately the way in which a family can be said to 'occupy' or 'be situated in' a certain place. Let us return to the sense-data which belong to the stone wall. They form a family, which is situated in a certain region R. Now in what sense can we say that at a certain time *t* the family occupies the *whole* of that region? Clearly only in a very odd sense. • We may say that the family has at that time a multitude of constituents which together make it up, and that some of these are in one part of the region and some in another. But we do not really mean that they all exist *simultaneously*: we only mean that they are *contemporary alternatives*. Not more than one or two will be actually existing at the time *t*, perhaps none at all; the rest, or perhaps all, are only obtainable. •

Thus if we say that at a certain moment the family F is situated in the region R, we only mean that all over the boundaries of the region certain mutually confamiliar sense-data are obtainable, one or two of which are perhaps actually being obtained. Now, as we saw before, this does mean that the whole region is differentiated from neighbouring regions: but only in the sense that at that moment the whole if it is 'reserved' for certain sense-data, if they should happen to come into existence, just as a whole compartment in a railway carriage is reserved for a certain party of travellers, if they should happen to catch the train. It does not mean that the whole region is actually 'taken' by the collection of sense-data for which it is 'reserved'. Indeed, it is quite certain that the

(A 100-103). I do not think that Kant's doctrine in this point need be taken in a subjective idealist sense, even if he himself took it so—as many of his followers certainly have.

whole of it cannot possibly be 'taken'. For that would require that there should be an infinitely numerous collection of observers all round the place at the same time: there is no other way in which all the sense-data can be actualized.

Now, it is true that a somewhat similar distinction applies to physical occupancy also. Of the causal characteristics by reference to which the physical occupancy of a region is defined some at any rate are actually manifested only at intervals during the period of occupancy, not continuously (as indeed their alternative name of 'powers' clearly indicates). And when they are not being actually manifested they are indeed genuinely present in the region, and their presence still serves to differentiate the region from other regions; but they are only present in an indirect and secondary manner. The region surrounding the magnet does still continue to be a magnetic field, even at times when no pieces of iron or the like are about. But this only means that if such a thing comes into the region it will be attracted

So far, then, there is certainly a parallel between the general nature of physical occupancy and the general nature of family-occupancy. But when we consider particular manifestations of these two modes of occupancy, the parallel breaks down. For the causal characteristics are sometimes actualized in those parts of the region in which the sense-data are not being actualized. Moreover, they can be actualized all over the region at the same time and the sense-data cannot

We shall give two instances. Consider first the thermal field connected with a red-hot lump of coal. When I take the red-hot coal out of the fire and look at it, only the front of it is present to my senses: in all the region reserved for that family of sense-data only one sense-datum is actual at that moment. But the causal characteristics of the coal are manifested behind, above, below, and to the sides of it. A piece of butter is melted here, a piece of paper is curled up over there, somewhere else a handkerchief is scorched, and the eyebrows of the observer are singed—all at the same time.

Again, let us consider impenetrability. If the stone wall is impenetrable, there will be occasions in which its impenetrability is actually manifested in all directions at the same time. It is not a case of simultaneous alternatives merely: it is not merely that at a given moment it will resist the assault of a foreign family *either* on this side *or* on that, whichever you like; it is a case of simultaneous actualization. Thus if

a man walks into the wall from the South and a cow walks into it from the North, and a shower of rain falls on it from above and the earth presses on it from below, all at the same time, it is impenetrable to all of them at once : all of them are actually resisted at the same time.

Now these examples show clearly that there are certain cases at any rate in which causal characteristics are manifested in a place, in such a way that the family which is situated in that place cannot conceivably be their subject. For the causal characteristics are actually being manifested in many parts of a region all at once, at a time when the family is actually manifested only in one small part of it, so that in most or perhaps all of the required places, the alleged subject of the characteristics just is not there to be the subject of them.

But not only are there certain cases where there is an obvious failure of correspondence between the family and the causal characteristics in respect of actual manifestation. It seems plain that there never *could* be such a correspondence. It is impossible for a family to be actually manifested by sense-data in every part of a region at the same time, since this would require the existence of an infinitely numerous collection of observers occupying an infinitely numerous collection of points of view all round the region (and indeed inside it as well) : whereas such a causal characteristic as impenetrability or magnetism is certainly not incapable of such simultaneous and pervasive manifestations. But if so, the family cannot be the physical occupant ; the parts of which it is made up do not possess the required sort of simultaneity. It is a whole not of simultaneous existents, but as to the greater part of it, and even on occasions entirely, of simultaneous alternatives. That is the only sense in which it can be said to 'be' all at once and to occupy the whole of the region at once.

So far we have only been considering the manner in which a place is physically occupied at a certain moment. If now we consider the manner in which it is physically occupied during a certain *period*, we shall come to similar conclusions and for similar reasons.

It is certain that when a family prolongs itself through a period of time, the occurrence of actual sense-data which are members of it is usually intermittent. Thus a certain family, *F* belonging to a thing *T* prolongs itself throughout a certain afternoon. But perhaps only two or three sentient beings

pass that way all the afternoon: if so, only two or three sense-data of the family actually exist in all that time, and each of them only lasts for a second or two. (Of course they are obtainable at any moment; but it is of actual existence that we are speaking.)

Now, it is true that in respect of some of the corresponding¹ causal characteristics there is a similar intermittency. Let us say, for argument's sake, in respect of them all. Let us concede for the moment (a large and dubious concession) that there is none of T's powers which is actualized continuously throughout the whole period. Yet although there are intermissions on both sides, there is no invariable *concomitance* between these intermissions. When the sense-data cease to be actualized, we do not find that the causal characteristics also cease to be actualized: quite the contrary, they go on just as before. If they do cease to be actualized, it is because some other causal characteristics are actualized in something else; the actualizing or non-actualizing of sense-data has nothing to do with it. The sun, for instance, ceases to warm the stone and to cast a shadow because a cloud has got in the way, not because we have ceased to look up into the sky.

We may offer some other instances. When a magnetized bar is concealed in my pocket no actual sense-data of that family exist. But the magnetic field remains actual enough. If a compass is moved near to the place where the sense-data would be if they existed, the needle is still deflected exactly as before. The magnetic field is intermittent in its manifestations; but what stops it from being actually manifested is absence of suitable foreign families, not the non-actualization of sense-data belonging to the magnet itself.

The stone wall will provide us with another example. As I walk along the road alone in the dusk, I do not see the wall and am too far away to touch it; the sense-data of its family, though still obtainable, are none of them actual. Yet the causal characteristics proper to the wall are still actually manifested in their usual place. For if I throw a ball in that direction, it still rebounds back to me in the usual way. The cutting off of the sense-data does not prevent the impenetrability from being actual.

The same instance shows that 'passive' powers (to use Locke's language) are just as independent of actual sense-data

¹ i.e. those which are present in the place where the family is and determine its mode of physical occupiedness.

as 'active' ones. Those changes in the mode of prolongation of foreign families (and the corresponding changes in the mode of occupiedness of foreign places) which result from the physical occupiedness of a place still actually occur, whether or not any actual sense-data of *those* families happen to exist. During part of its journey, I do not see the ball; but its course is reversed none the less, and when it returns it has a wet patch on it. So also the butter which I leave by the fire when I go out of the room has melted during my absence; the butter-family has altered its mode of prolongation, in respect of shape and colour, and a different region is physically occupied and by different causal characteristics. But no actual sense-data have existed during my absence.

Such facts as these show that the family is not the subject of those causal characteristics in terms of which physical occupancy is defined. For how can actual and manifest characteristics be said to characterize something at a time when the alleged *characterizandum* is but a system of potentialities? A compass needle is actually deflected by an unseen magnet. To say that the magnetic attractiveness characterizes a collection none of whose members actually exist at the time is really to say that they characterize nothing at all. Of course there is a relation between the family and the magnetic attractiveness; but it is not that of subject to characteristic. It is a *spatial* relation: the magnetic attractiveness is manifested all round the place where the family is located. We may add that this failure of correspondence between the family and the causal characteristics in respect of continuous actualization is not merely something occasional and exceptional, which happens in the case of a few families only. On the contrary, there is reason to think that it never fails to happen. That sense-data of a certain family should be continuously obtained throughout the whole of a certain period would require that there should be absolutely continuous observation all through the period; and it is extremely unlikely that this condition is ever fulfilled except for very short periods. (We must remember that even a blink would interrupt the continuity of our observation.) But it is clear that causal characteristics often continue to be actually manifested for very long periods, even throughout many ages. Thus for thousands of years a rock continues without any intermission to resist the pressure of other rocks piled up above it. And it seems extremely likely that so long as a physical occupant continues to exist and to

occupy space it is *always* actually manifesting some causal characteristics or other. Most of them, no doubt, suffer intermissions on occasion (though not all simultaneously), i.e. relapse into mere potentialities: some are lost altogether in course of time, and some new ones are added. But probably there are some few which continue to be actually manifested so long as the physical occupant continues in being at all; e.g. gravitational attractiveness, and in the case of terrestrial objects, impenetrability both as against whatever object it rests upon, and as against the atmosphere by which it is surrounded.

In the above argument we have used the language of subjects and characteristics, and have tried to show that a family is not the sort of entity which could be the subject of those causal characteristics which are found to be actually manifested. But in case this should seem an old-fashioned and question-begging way of speaking, we may point out that the argument can equally well be stated in the more modern language of 'facts'. Between the fact that something is actually manifesting magnetic attractiveness and the fact that such and such sense-data would exist if there were observers at such and such points of view—between these two facts there is not *the same kind of relation* as there is between two facts about the same particular, e.g. between the fact that Jones is thinking of fifty-two and the fact that he would be angry if any one spoke to him. The fact that something is manifesting magnetic attractiveness is a fact about a particular (what particular we have not yet decided). But the fact that the sense-data would exist if there were observers at such and such points of view—this is not a fact about particulars at all; for the very existence of these sense-data is admittedly at best problematical, and indeed we may happen to know that they do *not* actually exist. Like other 'existential' facts, it is really about certain universals (e.g. redness, hardness) and is to the effect that they would then have instances.

It comes to this then. If we insist on attributing causal characteristics to families (or to their visuo-tactual solids) we must radically alter our conception of what a family is. We must say that it has a *further constituent* over and above the actual and obtainable sense-data—a constituent of an entirely new kind, whose mode of situation in space and of persistence through time are both independent of, and different in their very nature from, the mode of situation and of persistence which belongs to the *sensory* part of it. We shall then have to admit

that the family is more than a mere system of sense-data, and the visuo-tactual solid more than merely visuo-tactual; and we shall have to admit also that the physical or causal part of its being is in no way *dependent* upon the sensory part, though united with it by spatial coincidence and by the consequent concomitant variation of the visuo-tactual standard solid with the causal constituent in respect of shape, size, and situation. Thus there are two distinct entities, not one, whatever names we call them by. And it seems better to mean by 'family' (likewise by 'visuo-tactual solid') simply a system of actual and obtainable sense-data, which is the way we have used the word all along; and to call the causally-characterized something, the physical occupant, by its accustomed name of physical object. And it is quite clear that in the original meaning of the word—the meaning in which the Phenomenalist used it when stating his thesis—the family is *not* the physical occupant.

Moreover, in the process of mutual confirmation which leads to perceptual assurance it is not merely a family of sense-data that we 'construct', i.e. become sygnostically conscious of; we are also doing something else. The existence of a family was not the whole of what we took for granted at the beginning; its nature or constitution is not all that we seek to determine further in the course of the process. From the first we took for granted the existence of two things (or, if you will, of a two-fold thing), a family of sense-data *and* a something which physically occupies the place where the family is: and we seek further determination of the causal characteristics of the second no less than of the sensory constitution of the first. At each step we further determine both and confirm the existence of both. Later on we shall have to discuss their relation more fully. For the present we have to insist that although united both in their existence and in their presence to consciousness, they are none the less distinct.

We must conclude, then, that Phenomenalism is false. The mode of being which a family has is such, and its manner of occupying space and continuing through time—in other words, the mode of unity which belongs to it—is such, that it is not capable of physically occupying a place, though it is capable of being situated in one. Phenomenalism is only plausible so long as we do not examine the nature of families too closely: and so slip into thinking of a family as if it consisted of a plurality of actually existent particulars (simultaneous and successive), neglecting that *heterogeneity*, that large or indeed

overwhelming admixture of the merely obtainable, which is characteristic of it. But although Phenomenalism must be rejected, it is of great service in forcing us to scrutinize very carefully our beliefs about the material world and to eliminate all unnecessary and unwarrantable elements from our conception of matter; and we may suspect that a prudent philosopher will keep as close to it as he possibly can.

But can we say anything more about physical objects except that they possess such and such causal characteristics (impenetrability or obstacularity being in every case one of them)? We can say that they have such and such sizes, shapes and positions at such and such dates, and that they change these in various ways. But from these facts we can infer very little. We can indeed infer that they have *intrinsic qualities* of some kind or other. For nothing can have only causal characteristics, since these presuppose relation to something else for those changes to occur in by reference to which the causal characteristics are defined; and it follows from the very notion of relations that the whole being of something cannot consist in its relations to other things—else there would be nothing to be related. Position and size are likewise relational; and shape cannot constitute the intrinsic nature of anything—else there would be nothing to be ‘shaped’. But although physical objects must have some intrinsic qualities or other, we have no means of knowing the specific nature of those qualities. Nor can any conceivable advance in Natural Science bring us a step nearer to this. Science can only show that the causal characteristics of a complex object, e.g. a stick of cordite, are dependent on the causal characteristics of its minute parts and upon their spatial relations to each other. It cannot tell us anything about the intrinsic qualities of the minute parts, nor does it attempt to do so.

It has indeed been suggested by Dr. Broad¹ that some at least of these intrinsic qualities must be ‘spread out’ or ‘extensible’ in the way in which colour is spread out over a visual sense-datum; this would apparently mean that the physical object has an intrinsic quality such that every member of any set of spatial parts of the object also has it.²

¹ Cf. *The Mind and its Place in Nature*, p. 207.

² Must the parts be above a certain degree of smallness? In the case of a red sense-datum it seems that they must be above the size of the *minimum visible* if they, too, are to be red.

But this does not really follow from what we know (though of course it may in fact be true). For *physical* occupation differs essentially from *sensory* occupation. When a visual sense-datum occupies a place in a visual field, i.e. stands in sense-given relations to other visual sense-data, it does seem clear that nothing could conceivably stand in such relations without having an extensible quality in the sense just explained. But this is not at all the way in which a physical object *physically* occupies a place. (Of course a physical object may also sometimes or always occupy a place in some further way, which does resemble sensory occupation: but we have no positive reason for thinking that it does.) Physical occupation is of a purely *causal* sort. When a thing physically occupies a place, all we know is that its characteristic effects are liable to occur in any part of a certain region at a certain time: every part of the region where a certain visuo-tactual solid is, or at least every part above a certain size, is impenetrable to other visuo-tactual solids,¹ and the region surrounding this is a physical field of such and such a sort. We may compare this sort of occupation with the military or the legal sort. When an army is in occupation of a town, or a settler occupies a piece of land, this does not mean that some peculiar 'soldierly' quality is manifested in every square yard of the town or again that there is a 'Smithish' quality manifested in every portion of Mr. Smith's piece of land. It only means that certain effects occur in every person of a certain kind who comes near enough (every enemy or trespasser); and in particular it means that the town or the land is impenetrable by such people.

It might indeed be said that the *causal characteristics* of the physical object are in some sense 'spread out' all over the region which the object physically occupies—in the sense that they are displayed in all parts of it as well as in the whole. But even this statement needs qualification. For the causal characteristics displayed in the several parts need not be of the same determinate kind as those displayed in the whole. Thus inside a clock there are cog-wheels and springs, but not clocks; and inside a living thing there are always

¹ No doubt there are various sorts of radiation to which it is not impenetrable. But we are speaking only of 'macroscopic' causal characteristics in terms of which everyday things like rocks and magnets are defined. We may add that all our beliefs about 'microscopic' entities are based upon examination of such everyday large-scale things, whose existence therefore is much more certain than theirs is.

regions, if we take them small enough, in which physico-chemical and not vital characteristics are manifested. And even if the causal characteristics are thus 'spread out' it does not follow that the *intrinsic qualities* of the whole object (whatever they are) are in any analogous way 'spread out', i.e. that they are homogeneous with the intrinsic qualities of every member of every set of parts of it.

We must therefore maintain that we have no determinate knowledge of the intrinsic qualities of the physical object (or physical occupant), though we do know that it has some intrinsic qualities or other; we only have determinate knowledge of those causal characteristics in which physical occupancy consists. It follows that the term 'physical object' has reference, as it were, only to a certain office or function; it does not connote a thing of such and such an intrinsic nature (though what it connotes has of course got one)—it is like 'postman' and not like 'man'. And for all we know these causal characteristics may be but an insignificant part of the total being of the things which they characterize; so insignificant indeed (even as compared with the totality of their causal characteristics, to say nothing of their others) that if we knew more we might conceivably think that to call them physical objects at all is a very inadequate, though still true, way of speaking: just as it would be a very inadequate though true way of speaking to call a statue a large lump of stone, and again the fact that a man is a postman may be by no means the most important fact about him. In particular, they may well be less separate from one another than a study of these sensibly manifested causal characteristics of them would lead us to expect. Whatever Nature is in its intrinsic being, at any rate it is more than merely Nature.

So far, Kant's conception of the *thing in itself* seems to be substantially justified. But first, the distinction between it and the phenomenal, i.e. perceptible, object¹ should be taken as a distinction between the whole being and a part

¹ Whether Kant himself supposed that the phenomenal object was *manufactured* by our minds is a question which we need not discuss. That he sometimes thought this is quite possible; that he always or even usually did is extremely difficult to believe. In any case, if he did, he was certainly wrong. But fortunately the main contentions of the *Critique*, though often carelessly stated, are independent of this error. Cf. p. 286, above. I am assuming of course that a phenomenal object or *Erscheinung* is not one single sense-datum, but that to which a number of sense-data are 'referred' in the act of synthesis (or *synopsis*).

of the being of one single something, and not as a distinction between two separate somethings. Secondly, the popular doctrine that it is 'unknown and unknowable', however brilliant the metaphors which it is the custom to use in expounding it, of course rests upon a whole series of gross confusions': (1) between perceptual consciousness and other forms of cognitive consciousness, (2) between determinate and indeterminate knowledge, (3) between knowledge and rational conviction, (4) between acquaintance with something and knowledge (or again rational conviction) *about* it. And Locke is also right to say that 'we know not the essence of matter', i.e. we do not know the intrinsic characteristics upon which physical, i.e. space-occupational, characteristics are dependent. We may remark, lastly, that it does not seem *necessary* that a region occupied by a visuo-tactual solid (and therefore by a family of sense-data) should also be physically occupied. But we do find as a matter of fact that regions occupied by visuo-tactual solids are always impenetrable; and usually they are the centre of physical fields also. Thus we can reasonably assume that any particular region occupied by a visuo-tactual solid will also be physically occupied, until it is proved not to be; and this is fortunate, for if we could not our senses would be of little use to us.

Are there, on the other hand, impenetrable regions which are not occupied by visuo-tactual solids, and physical fields, not having visuo-tactual solids in their region of maximum intensity? There are certainly grounds for thinking that there are physically occupied regions having in them no visuo-tactual solid (and no family) accessible to human senses: the region occupied by an electron would be an instance. But it is impossible to prove that they are not occupied by *some* sort of sensory solids analogous in structure to those with which our senses make us familiar, though not consisting of visual and tactual constituents¹; and I suspect that we usually think of them as if they were. On the other hand, it would be rash to assert that they *are* thus sensibly occupied. However this may be, such 'microscopic' physical objects do have a very close connexion with ordinary 'macroscopic'

¹ Thus the mythical bishop who asked his neighbour at dinner 'Now, Professor, what *colour* is an electron?' was not quite so foolish as he is commonly taken to be. Cf. Kant on the *Postulates of Empirical Thought*.

visuo-tactual solids and with 'large-scale' families composed of ordinary sense-data. In the first place we should have no empirical evidence of their existence at all were it not for the specific changes which occur in the mode of prolongation of ordinary 'large-scale' families in certain neighbourhoods, for instance, changes in those belonging to measuring instruments¹ or to photographic plates. And secondly, they are as a rule either located in some part of the region occupied by an ordinary macroscopic visuo-tactual solid (i.e. by the standard solid of an ordinary macroscopic family), or at any rate they emanate from it.

Now it is only ordinary macroscopic objects such as tables and rocks, and the relation of them to sense-data, which concern us in this book, for it is only such things as these which can be said to be 'perceived' in either of the two senses of the word²; and it is at any rate clear that all our knowledge of the physical world, both of its macroscopic members and of its microscopic ones, is based entirely on our observation of ordinary large-scale objects, and therefore upon acquaintance with sense-data. It is *in terms of sense-data* that every physical object, be it small or great, perceptible or not, has eventually to be described: and if it cannot be described in terms of 'its own' family of sense-data (obtained or obtainable) with whose nuclear visuo-tactual solid it is coincident, then it must be described in terms of 'foreign' families of sense-data whose mode of self-prolongation alters in its neighbourhood. If it is not related at least to obtainable sense-data in at least one of these ways, then though it may be an indispensable mathematical device or a helpful 'model' for the imagination, assuredly it cannot be called a physical object. To this extent the Phenomenalistic philosophers are in the right.

We must not, however, infer from this, as some have, that before there were any men or other sentient animals the physical world did not exist. In the first place there is no *a priori* reason why sense-data should not have been obtainable at that time, even though there was no one who actually obtained them; if there had been observers at such and such

¹ It may be allowable to remind Sir Arthur Eddington that measuring instruments are as much physical objects as chairs or elephants. We cannot possibly define a physical object as a class of pointer-readings (as he seems to wish to do); for what is the dial that is read, and what is a pointer? Cf. *The Nature of the Physical World*, pp. 251-3.

² i.e. these and only these (a) are what we have perceptual consciousness of, and (b) are present to our senses.

points of view, surely there would have been such and such sense-data, of the same types as those we sense now.¹ If so, 'there were' these families of sense-data just as 'there are' now, and they prolonged themselves through time in various ways; and then, as now, there were regions at and near the boundaries of which such and such alterations occurred in their modes of self-prolongation. For as we have seen, the being and the self-prolongation of families (including of course visuo-tactual solids) is independent of the actual obtaining of sense-data. Thus although the term 'physical object' is meaningless apart from reference to sense-data, there might perfectly well have been physical objects at times when no actual sense-data had as yet existed: it is enough if the sense-data were obtainable. So also there may perfectly well now be physical objects at places in which no sense-data actually exist or ever have existed, e.g. in the interior of the earth or on the other side of the moon. If pre-human or pre-animal objects are rejected, so ought contemporary imperceptible ones to be. And since no philosopher does in fact deny the existence of the second, none ought to deny the existence of the first; for logically they are upon exactly the same footing.

And secondly, we have positive reasons for thinking that physical objects did in fact exist before there were any sentient animals. We are certain that physical objects exist now, e.g. the earth; and they would not be what they are if they themselves or other objects of the same general type (e.g. masses of incandescent vapour) had not existed in the remote past.

'But what was *actually* happening at that time?' we may be asked. 'It is not sufficient to say what sense-data *might* have been existing.' For that matter, we may answer, what is actually happening at present? All we can say is that at present, when there are percipients obtaining actual sense-data, physical objects are so situated and so move that sometimes one region and sometimes another is impenetrable and is the centre of a physical field. Beyond this we know nothing of what is happening; or it may even be as Kant thought, that this is all that is *happening*, and that so far as the extra-physical portion of their nature goes temporal predicates are not applicable to objects at all. At any rate this constitutes the whole nature of all such happenings as can properly be called physical. Now in principle, though not in detail, we know just as much as this about the physical happenings

¹ Cf. Berkeley on the Mosaic account of the Creation.

which occurred before sentience began ; for those like these present ones are only describable in terms of the regions which they rendered impenetrable and which they made to be physical fields—that is, by reference to families and visuo-tactual solids standing in such and such temporal and spatial relations to each other. And we know as little of the intrinsic qualities of the physical objects which now exist as of the intrinsic characteristics of those which then existed.

What is true is that there were then no actual sense-data. It is also true that although there was time in the sense of temporal order there was no *felt passage* of time, and it did not have that characteristic which we may call 'felt muchness'. Thus those not uncommon writers who try to frighten or to humiliate their fellow rational beings, by insisting on the vast age of the earth, or again of the stellar system, and comparing it with the insignificantly short period during which sentient animals have existed, are the victims of a simple confusion. When no actual sense-data as yet existed, periods of time could indeed be 'long' in the sense of longer than an assigned period which we take as standard. But they could not possibly have been terrifying or tedious ; apart from sentience, time *passes* neither quickly nor slowly. And if imagination is to be indulged and emotions evoked, I do not know why we might not equally well imagine a superhuman conscious being for whom a million million years pass as quickly as five minutes do for us, and why we might not measure the imaginary 'felt muchness of those years by his imaginary sense-data, instead of measuring it by those of an equally imaginary human percipient. Similar considerations apply to size. In the absence of sense-data it is simply meaningless to describe any size as 'overwhelming'. It may be many times greater than some assigned unit ; but in a mere numerical ratio there is nothing to 'overwhelm' any one. Besides, you may take any unit you please.

At the beginning of Chapter VIII we set ourselves the following question : When a number of sense-data belong to the same material thing, how are those sense-data related to one another ? What sort of group do they form ? We hoped that the answer to this question would throw light upon the 'belonging to' relation itself. And certainly we are now able to state at least certain conditions which have to be fulfilled if a particular sense-datum *s* is to belong to a certain material thing *M*.

First, *s* must be a member of a *family* of sense-data prolonging itself through time and having for its 'centre' a standard solid situated in a certain place in the system of standard solids.

Secondly, the place where the standard solid (and therefore the family) is situated must also be *physically occupied*, i.e. certain causal characteristics must be manifested there.

It may be thought that this just is the *definition* of 'belonging to', and that '*s* belongs to *M*' is equivalent to 'There is one and only one family of sense-data which is coincident with *M*, and *s* is a member of that family'. The objection to this is that it identifies the *material thing* with the mere *physical object*, i.e. with what we have called the 'physical occupant': which (as we have seen) is just an entity characterized by certain causal characteristics or powers manifesting themselves in a certain region at a certain time. That a material thing is not merely a family of sense-data, as the Phenomenalists think, is clear. But is it not equally clear that it is not merely a physical occupant either? Let us take instances. A material thing is such an entity as a tree, a rock, a table, a cat. As soon as we reflect upon what we mean when we use such a word as 'table', it becomes perfectly obvious that we mean something in which a particular sort of family of sense-data is an ingredient. We mean neither the family alone, nor the physical object alone, but something which consists of both: we mean a certain sort of family *together with* the physical object which is coincident with it. This whole complex, and nothing less, is the table. The Causal Theory identifies the complex with one of its elements, Phenomenalism with the other; to guard against these errors it is convenient to call the complex 'the complete thing'. What we mean in ordinary life by such terms as 'the material world' or 'Nature' is the system of all the complete things that there are.

I do not know how to prove that by words like 'matter' and 'material thing' we always mean complexes of this sort. It seems to me simply obvious. Yet it is certain that they have often been thought to mean just physical occupants: indeed this has been the prevalent opinion among philosophers for the past three centuries. Why have they thought this when the evidence of reflection is so clearly against them? Perhaps because they supposed that if we meant by 'material thing' something in which sense-data are ingredients, then

there could be no *instances* of material thinghood at all, whereas it is perfectly plain that there are. And the reason why they supposed this was that they began by accepting without criticism some form of the Causal Theory, and held that 'belonging to' can only mean 'being a remote effect of'. Being satisfied with this, they never paid much attention to the relations which sense-data belonging to the same thing have to one another, and so they never reached the notion of a family of sense-data at all.

Now if sense-data had been entirely isolated fulgurations, or if they had just been related to each other by the relation of temporal continuity (which is the most daring suggestion that these philosophers entered upon¹), then it would have been plausible to deny that they are constituents of material things, and to identify material things with physical occupants; there would then have been nothing to suggest that they were related to material things in any but a purely causal way.² (The suggestion, however, is rather an academic one, for had it been so, we should have had no consciousness of the material world at all.) But in fact sense-data cohere together in families, and families are coincident with physical occupants: indeed a physical occupant of the ordinary macroscopic sort is *defined* as a causally characterized entity with which a family of sense-data is coincident. It simply is not the case that the sense-data and the physical occupants are related only in a causal way, though doubtless they are in fact causally related; and it simply is the case that thanks to this coincidence they form a complex of quite another sort. And this other sort of complex is precisely what we all have in mind when we speak about a 'piece of matter' or a 'material thing': for instance, about a table, a rock, a tree or a cat. All these terms stand for what we have called complete things, consisting both of physical occupants and of families coincident with them.

¹ I cannot see that there is anything particularly helpful in the notion of a 'presentation continuum'. It does nothing whatever to solve the problems which Hume and Reid, for instance, were grappling with. For the continuum, though no doubt real enough, is of the *wrong kind*. Sense-data belonging to different things can be continuous in this way, e.g. when we glance over all the things in a certain room, or even when we pass from waking to dreaming. Before we can get consciousness of material things, we must *break up* this continuum, and find *other* relations between its component 'presentations'.

² We may remember that an isolated sense-datum is, strictly speaking, *nowhere* in the space of the material world. Cf. pp. 246-252, above.

I may add that if we have to choose between the two erroneous views, that which reduces the material thing to the physical object, and that which reduces it to the family, we had much better choose the second. A pure family does have many of the properties which we require a material thing to have: it is public, it is located in space, it prolongs itself through time and from place to place. But a pure physical object is something so shadowy that we can scarcely conceive of it at all. In order to describe it in any definite way, e.g. to attribute to it a particular shape or size or location, and a determinate sort of causal characteristics, we have to conceive it to be related to certain families, with whose members we are actually acquainted in sense.

The correct definition of 'belonging to' is therefore as follows: 's belongs to M' is equivalent to—

- (1) s is a member of a family of sense-data F.
- (2) There is a physical occupant O, with which F is co-incident.
- (3) M consists of F and O in conjunction.

If we want a name for this theory of belonging to, we may call it the *Collective Delimitation Theory*. This name lays stress upon the two most important points: that the primary relation is one between an entire family and a material thing, the relation between individual sense-datum and thing being derivative; and that the family is related to the material thing by delimiting or coinciding with the physical (i.e. physically occupative) portion of the thing.

This result may perhaps be set in a clearer light if we add a few words on the nature of *Secondary Qualities*: these are such qualities as black, red, hard, smooth, hot. Two views have commonly been held about them: on the one hand, that they do not characterize material things at all, so that it is just false to say that the cat is black or the table is smooth: on the other, that they do characterize material things, but are not really qualities but only powers or causal characteristics. On the second view, which is the one usually adopted by Locke, the statement 'the cat is black' only means that the cat has the characteristic of causing black sense-data. Plainly this is the more plausible view of the two, for plainly such statements are often true, and it does at least admit this: though it gives a most unpalatable analysis of them, which does not correspond in the least to what we really mean.

But what led philosophers to put forward so odd a theory? They thought that the only alternative was to say that the cat has many colours at once, for different people sense different colours when they look at it. Accordingly they suggested that such terms as black really have two distinct meanings: on the one hand, 'black' means a certain sense-given quality, which is actually found in certain individual sense-data; on the other, a certain power or causal characteristic inhering in physical occupants. Now it is quite true that 'black' does have two meanings: but it seems to me that these philosophers have got the second one quite wrong, owing to their ignorance of the existence of families. In its second meaning 'black' is what we have called a collective characteristic, inhering not in any single sense-datum, but in a *family* of sense-data taken as a whole. It is what we called above a *standard quality* of the family: it is that sensible though not necessarily sensed quality by reference to which (as their common limit) the various qualities of the various visual members of the family can be ordered in a system of gradual transition series. And because the complete cat includes the family as well as the coincident physical occupant, we can attribute this standard quality to the cat as a whole, though by no means to its purely physical part taken alone.

Indeed were this not so, we should never have the right to say that the cat *is* black. We should have to say that it *makes* black, as it makes a mewling sound. And plain people, who have not yet discovered that visual sense-data are causally dependent on the thing that they belong to, would never be able to apply the adjective to cats at all.

The right conclusion is, on the contrary, that colour and other secondary qualities belong to complete things no less than primary qualities do, and are no less essential to them. And as the complete thing is what we all mean by 'a piece of matter', we can and must say that secondary qualities no less than primary ones are qualities of matter, nor could there possibly be a piece of matter which did not possess them.

We saw in Chapter VII that our assurance with regard to the existence and character of a particular material thing is got by a further-specification process which supervenes upon an original acceptance. Our study of the relations between sense-data in the last two chapters has incidentally thrown

further light upon the nature of this process. We can now see that in taking for granted the existence of a material thing to which a particular sense-datum belongs, we are also taking for granted that there is a family of sense-data of which this sense-datum is a member. And in order to determine further the nature of the thing, we are bound to determine further the nature and constitution of the family—what other sense-data it consists of besides the first, what sort of situation it has, and particularly what sort of standard solid is its nucleus. And when at the end we are assured of the existence of a particular sort of material thing, say a tobacco-tin, a very important part of what we are assured of is, the existence of a particular sort of family having a standard solid of such and such a shape (here cylindrical). Indeed the Phenomenalists are very nearly right in saying that this is *all* that we are assured of: but not quite—for we are also assured that in the place where the family is situated certain causal characteristics are persistently or intermittently manifested, in other words, that the place is also physically occupied.

We can also clear up two further points which have been left in some obscurity. When the original sense-datum is said to 'specify in greater or less degree' the front surface of the thing, the reference is primarily to the surface of the *standard solid* of the family which we are taking the sense-datum to be a member of. And the sense-datum 'specifies' it as follows. If the sense-datum is a member of a family at all, then it is either a nuclear member or a member of a distortion series. If it is a nuclear member, it is actually a *constituent* of the front surface of the standard solid, and its shape differs from the shape of that only in not having the maximum degree of differentiation (not in being distorted perspectively or otherwise). We know then that if the sense-datum is nuclear, the front surface of the standard solid has approximately such and such a shape. On the other hand it may be 'imperfectly' constructible, or not at all;—if so, it must be a member of a distortion series. Even then we are still able to guess what *sort* of shape it is a distortion of. For it is an empirical fact that these series proceed according to certain rules, for instance, the rules of perspective or of refractive distortion. (These rules, we may note, have nothing to do with the *causation* of sense-data: they simply state the way in which certain sense-data are actually found to be

related in series.) But of course from mere inspection of one sense-datum we cannot tell which particular type of series it has a place in, e.g. whether merely perspectival or worse, nor therefore what particular shape the limit of the series may have.

We saw before that the notion of material thinghood is an *a priori* notion, which cannot be reached by inspection of sense-data and abstraction of their common characteristics. We can now see that the notion of 'confamiliarity' or 'family unity' is also *a priori*. A family of sense-data has the following constitutive characteristics which are not sense-given. First, it is essential to every family to have within it a 'nuclear' set of sense-data related to each other by progressive adjunction; and it is clear that the whole which they compose (the standard solid) possesses a peculiar type of *spatial unity*, which is not displayed by any single sense-datum or sense-field.¹ Further, all nuclear sets of data, and thereby all families, are united in a single *comprehensive spatial system*. It is still more obvious that this type of unity (which includes the first) cannot be given in sense.

Secondly, let us consider temporal characteristics. Every family persists, or prolongs itself through time. This means that a number of sets of sense-data together constitute a *temporal whole*, which displays an *intrinsic or objective order* distinct from merely subjective successiveness. This type of wholeness, and this distinction between two types of successiveness, are not given in any one specious present: nor yet in any number of specious presents either, unless we already know how to arrange these in one single ordered series. The non-sensuous character of this kind of whole is particularly obvious if we reflect that almost every temporal whole that we become aware of has 'gaps' in it, so far as actual sense-data are concerned; certain portions of it contain no actual data at all but only obtainable ones. And we have 'to put these gaps in the right places', i.e. discover which portions of the whole, if any (say of the history of a certain chair), are thus empty of actual sense-data, and whereabouts they

¹ It is true that a tactual sense-datum in some cases (e.g. when we hold a marble in our clenched fist), and the somatic datum always, is 'spatially complete' in three dimensions. But neither includes within itself many data from many different sense-fields, which moreover are given successively not simultaneously.

come in relation to the rest: it being obvious that these portions are not given in sense.

It is clear that Spatial Unity and Temporal Wholeness must be taken together, to form the complex notion of a *spatial whole persisting through time*, displaying an *intrinsic order* which is both spatial and temporal.

Lastly, we advance from this to the notion of a *comprehensive system of persistent spatial wholes*, so ordered that any two members of it are related to each other either by spatial relations or by temporal relations or by both. This notion is the farthest of all from sense.

These seem to be all the notions needed for that 'synthetic' (or 'syngnostic') further-specification process which takes us from acquaintance with sense-data to the consciousness of an ordered system of spatially and temporally related families, each having its standard solid and its 'standard qualities' of various sorts. To pass from this to the full consciousness of matter we need the further *a priori* notion of *causation*.

But we must realize the mere conceiving of these notions would not be enough. One must also have an *expectation* or *anticipation* of their applicability to sense-data. Nor is this really separate from the conceiving; we only conceive of them *in* expecting that they apply to sense-data, i.e. in expecting that there are groups of sense-data such that each group collectively exemplifies them. From the first, we must be 'on the look out for' sense-data related to each other in the confamiliar way. This is that Primitive Credulity mentioned above, which manifests itself in the taking for granted which is the primary form of perceptual act. We are innately disposed to take any sense-datum to be a member of a family of some sort or other, located in some physically occupied region, and to be on the look out for further sense-data confamiliar with the first, so that the nature of the family may be further determined. And that specific sort of 'being on the look out' is impossible to a purely sensitive being: for what we are on the look out for (whether in a particular case we find it or not) is something exemplifying the *a priori* notions enumerated above.

This expectation or anticipation is not something which comes and goes. It does attach itself now to this sense-datum and now to that, and these 'attachments' may be said to come and go. But it itself is a *standing* condition of mind. And this it is not by accident, but because it is essential to

human consciousness as we know it; a mind without this would be so far removed from those we know of that we could only conceive of it negatively.

It is the standing character of this expectation which has led some Kantians to declare that there is a 'timeless act' of synthesis which is, as it were, the basis of human consciousness. This seems to be an error. What is basic is not an act of *synthesis*, but an *expectation of synthesizability*. The 'synthetic' further-specification process, whereby we reach assurance concerning this material thing or that, is certainly something which takes place in time. In the morning I assure myself of the existence of Edinburgh Castle: in the evening, of the Albert Memorial. And even the expectation of synthesizability is not timeless, though it is, no doubt, a permanent and fundamental disposition of the mind.

CHAPTER X

THE ORIGATION OF SENSE-DATA

THE reader will not have failed to notice that the account we have given of our manner of reaching assurance concerning the existence and nature of material things has one point in common with that suggested by the Causal Theory, which we discussed in Chapter IV; according to both, observation of the effects which material things cause plays a part in giving us this assurance. But there the resemblance stops. In our account the discovery of families of sense-data is the first and most important step, and causal considerations only come in after this: but the Causal Theory relies entirely upon causal considerations and says nothing about families at all. Secondly, in the Causal Theory material things are regarded primarily as somethings which *stimulate our minds* both to generate and to sense certain sense-data; whereas in our account 'stimuli' have never once been mentioned. That the coming into existence of a sense-datum which is a member of a family (i.e. is not completely wild) is in point of fact partly caused by processes in the thing to which it and the other members of the family belong, and that the same processes are a part-cause of our sensing it, we do not of course deny; and we shall try to describe presently our grounds for believing this. But what we must deny is that the knowledge or even the conception of such 'vertical' causality (or stimulation) is in any way *necessary* for assurance concerning material things. It is the knowledge of 'horizontal' causality which is necessary for that: the knowledge of 'vertical' causality is a luxury.

Thirdly, the two accounts are concerned with different kinds of effects. According to the Causal Theory, it is the coming into being of the single sense-datum (or of it together with the sensing of it) which is relevant. In our account, this is not mentioned at all; what is mentioned is the coming about of a change in the mode of prolongation of a whole *family* of actual and obtainable sense-data. It is obvious that these two effects are utterly different. The second is not only much more

complex than the first; it is even independent of actual sense-data altogether. For there still is this change in the family's mode of self-prolongation, whether any of the sense-data then obtainable are actually obtained or not.

Fourthly, these two kinds of effects are known in quite different ways. That a sense-datum exists, we know by sense alone. That a family is altering its mode of self-prolongation (like any other fact about a family) is knowable only by an elaborate process of synthesis.

Lastly, on our view our assurance with regard to the existence of their causes is not reached by *inference*. We simply *find* that the place where a family is situated is also physically occupied. We anticipated that it was so from the first, and our original anticipation is gradually confirmed in the course of the further-specification process, which shows us what particular kinds of foreign families alter their modes of self-prolongation in its neighbourhood, and in what ways. It is true that we could never have discovered families of sense-data at all except by a 'synthetic' process. But synthesis (or syngnosis), though it is an intellectual operation, is not inference. It is not an apprehension of *implication* or *necessitation*, as inference is. It is simply the discovery of certain kinds of wholes whose diverse parts are successively and separately presented, and of certain kinds of relations between such wholes. In short, the operation is not a causal argument, in which we already know that A is the effect of something or other, and the only question to be settled is the particular nature of that something: it is more fundamental than any causal arguments, since without it we should not know that there is a system of causes and effects at all.

But although the knowledge of 'vertical' causality is a luxury, and we can have complete assurance of the existence of matter without it, we do believe that there is this sort of causality as well as the horizontal sort. It is generally believed, for instance, that the sense-data of a particular family not only belong to a particular material thing, but are causally dependent on that thing as their 'source' or differential condition. This belief could neither be entertained nor justified unless we already had assurance of the existence of the material thing in question; and the Causal Theory falls into a gross *hysteron proteron* at this point. Still, having that assurance, we do come to have this belief also. How then do we reach it, and what grounds are there for it?

At first sight it may seem a strange paradox that any such belief should ever have existed. If only sense-data are given, how can we know anything about that which preceded their coming into being? And I suppose that every one who reaches this belief at all reaches it first with regard to *other people's* sense-data. One observes by the ordinary processes of perceptual consciousness that a certain change in a particular thing, such as the lighting of a lamp, leads to a certain kind of behaviour in another organism (including speech), from which one concludes that the mind animating it is conscious of a visual sense-datum belonging to the lamp. One also finds that certain other changes put a stop to this behaviour; for instance, putting a screen or shutter between the lamp and the other organism; changes in this organism itself, such as blind-folding it or dosing it with chloroform, also interrupt the behaviour. Still other changes *alter* the organism's behaviour (including the verbal report, if any) but do not stop it: for instance, the interposition of prisms or lenses, and the derangement of its sense-organs whether mechanically or by means of drugs. This leads one to the conclusion that the other man's sense-data are jointly dependent on processes in the thing they belong to, on processes in his organism and (in the case of sight, hearing and smell) on processes in the intervening region between the two.

But how am I to apply this argument to myself and my own sense-data? And if it can be applied, how does my consciousness of matter and of processes in it (including those inside my own body) manage to survive the application? These are the questions which are never faced by the physiologizing philosophers, and consequently their whole theory of knowledge is based—as we have seen—upon a confusion between two different standpoints, that of the percipient himself and that of an external observer who studies the percipient's body. And the questions are undeniably difficult. But there *must* be some answer to them. One's knowledge of the physical and physiological conditions of the occurrence of one's own sense-data—if one has it—is certainly derived from sense-experience; and it certainly presupposes (and therefore cannot invalidate) assurance of the existence of various material things.

The fact that each of us has *several senses*, that is, has the power of sensing several distinct kinds of sense-data, enables us to solve the difficulty. By reflection on the data of one

sense, I can discern how the data of *another* sense originate. Thus I can often see an impact of one distant object upon another, say of a mallet upon a post, before I hear a certain sort of sound : I can observe that when the blow is repeated, the sound is repeated shortly after, and that as the blow varies, the sound varies too. Also I can observe by touch that my ears are being stopped up by my fingers or by pieces of cotton-wool ; and I find that auditory sense-data then cease altogether, and that as soon as I unstop them again fresh ones occur. So, too, I can be conscious by touch of the movement of the electric light switch or the loosening of the handkerchief over my eyes, *before* I see the room : and I can feel the spectacles being removed from my nose before the visual field suffers alteration. Also I can taste and touch the alcohol or other drug, the taking of which precedes striking changes in my visual experience. Conversely, I can obtain visual sense-data of a thing before I obtain tactual ones, and so I can learn that physical contact is a condition of tactual experience ; for instance, I see the cricket-ball coming before I feel it hit me. I could also see a certain portion of my body, say the hand, being anaesthetized, and so I could learn from sight that processes in certain afferent nerves were necessary for the production of tactual data.

Thus the possession of several senses as it were multiplies the percipient, and enables him to be at once the experimenter and the person experimented upon ; it is as if one mind animated several organisms at the same time, and could observe a process in the one by the help of a process in the other. But this is not all. Even a purely visual being could discover some at any rate of the facts about the origination of visual data. The reason is that the sense of sight is, as it were, a host in itself. Since the visual field has extension, any act of visual sensing is equivalent to a multitude of visual acts all performed by the same mind and directed upon different visual data. I cannot see behind the screen or the cloud, and so learn directly that it is responsible for my failure to sense sense-data belonging to things on the far side of it. But there are often occasions when part of the view is taken up by the screen and part is not. I then notice that where the screen is I can see nothing more distant than it, but where it is not, I can see things much more distant. I can also notice that *movement* of the screen cuts off things formerly visible, and enables me to see others instead. It is in this

way that I learn that the *eye* is important for vision (a fact by no means self-evident, which has to be learnt), for the eyelid is one such screen. Analogous considerations apply to lenses and other refractive agents, provided that they are not perfectly transparent.¹ The presence of a sense-datum belonging to the lens in a particular part of the field of view is observed to be uniformly accompanied by a specific sort of distortion in those parts which are sensibly beyond it. Thus a purely visual being could know that the occurrence of visual sense-data is dependent on the passage of some sort of radiation, moving from the thing to which the sense-datum belongs to the point of view which he occupies at the moment. And he might learn indirectly from mirrors that immediately beyond his point of view there was an eye and a head: he might then conjecture that processes inside this had something to do with the final result, but he could not tell exactly what. In a similar way, a purely tactual being could discover that the size and shape of the tactual sense-datum varies with the part of the organism which is touching. A purely auditory or olfactory being, on the other hand, could learn nothing about the origination of *his* sense-data; for he would not have any consciousness of matter at all, and could not discover anything whatever about sources or media or sense-organs.

Having discovered these facts about vertical causality, we can then proceed to correlate them with facts already ascertained about *horizontal* causality. And we can thus learn that the two sorts of causality are manifestations of one and the same set of physical powers: for instance, that the mode of radiativeness which generates visual data also causes changes in photographic plates; that screens cause shadows and interrupt the radiation of physical heat, as well as cutting off various sorts of sense-data; and that the convex lens which distorts the visual field also plays a part in causing a piece of paper to burn.

These, then, seem to be the facts—themselves revealed by sense—which lead us to believe that the occurrence of sense-

¹ When a thing is perfectly transparent from a certain point of view, no visual sense-datum of it is obtainable from that point of view. Indeed that is what 'perfectly transparent' means. But we might be able to obtain one from some other point of view, and so learn the shape, size and situation of the thing. If we could obtain none at all, we should have to fall back on touch.

data is caused directly by processes in our own organisms and remotely (except in the case of complete hallucination) by processes in the thing to which the sense-data belong. That there are organisms however, and things to which the sense-data belong, and other things in the intervening region, are facts which we *start* from in this argument, and not as the Causal Theory thinks, facts established by it. We are already assured of the existence of the organism, the table and the lens: what we now learn is that they stand in certain causal relations, and that the occurrence of sense-data of a particular sort depends upon this.

Nevertheless, there is still a very serious difficulty with regard to vertical causality. What it is, can best be seen by asking what a Phenomenalist would make of the empirical facts. According to him, a material thing is *identical* with a family of sense-data. How then can he admit that sense-data are *causally dependent* on material things? Let us consider first the dependence of sense-data on the brain of the sentient, which is perhaps the most difficult case. If sense-data are dependent on the brain, then on Phenomenalist principles it must follow that the material world is simply the system of all actual and possible brain-dependent events, and any particular piece of matter is a selection of certain ones among them. But if so, the brain itself is simply a selection of actual and possible brain-dependent events. And how can a thing be a portion of the events which depend upon itself? And if it be held that sense-data are actually states of the brain (a view which the facts of sense-datum-genesis do make quite plausible), then the result is odder still. A Phenomenalist would then have to say that the material world is the system of all the actual and possible brain-states which are sensuously qualified. And then the brain would be a selection of actual and possible states of itself.

Nor is the difficulty confined to the brain. It applies also to the external 'source' which stimulates our sense-organs. Phenomenalists hold that the table, for instance, is just a family of sense-data. How then can the sense-data which *constitute* it also be causally dependent upon it (as their source)? A thing cannot be a part-cause of the existence of its own constituents: that is saying that it could be a part-cause of its own existence, which is nonsense.

Yet the observed facts are there. And do they not reduce in the end to certain correlations of sense-data? If so, must

it not be possible for a Phenomenalist to admit them into his system? It seems to me that he can, but only in one way, and then only by drawing a somewhat odd conclusion from them. He must appeal to the distinction between *subjective and objective successions*, or (as they are better called) *extrinsic and intrinsic successions*. An extrinsic or objective succession, it will be remembered, is a succession of sense-data such that after it the family (or families) of which the sense-data are members has the same 'structure' as before, the standard solid and the standard qualities remaining unaltered: while an intrinsic succession of sense-data is one after which there is some difference in the standard solid or the standard qualities or both. Let us begin by considering the empirical facts which are supposed to prove that the occurrence of sense-data depends upon processes in the sentient's organism. What they really prove, a Phenomenalist must hold, is merely this: that *extrinsic* (subjective) successions in environmental families are conditioned by *intrinsic* (objective) successions in the somatic family. And on his view this is of course the same as saying that extrinsic successions in environmental *things* (such as tables or trees) are conditioned by intrinsic successions in the sentient's own *body*. Likewise, extrinsic successions in the table are remotely conditioned by the intrinsic state of the table itself, that is, on the Phenomenalist view, by the actualization of certain causal characteristics which that family of sense-data has. In virtue of possessing these causal characteristics the family may be called the 'remote cause' or 'source' of extrinsic successions in itself. And these same causal characteristics of the family are also manifested horizontally as well as vertically, by changes caused in other environmental families: for instance, those which are the source of extrinsic successions of *visual* data are manifested in another way in the occurrence of shadows and of chemical processes in photographic plates.

But a Phenomenalist cannot allow that either the states of the source or objective successions in the organism have anything to do with *bringing into existence* families of sense-data; since in his view the source, and the organism, and any intervening objects there may be, are themselves families of sense-data. That there are sense-data and that they are united into families, e.g. that there is this sense-datum and that other sense-data can be obtained which are confamiliar with it: this, according to him, is simply a basic

fact, which could not possibly admit of any causal explanation, since all causal laws already presuppose it. For unless there were already families of sense-data there would on his view be nothing for causal laws to be about.

Further, it appears plausible to say that sense-data are *events*. But a Phenomenalist, in admitting this, will have to insist that there are two radically different *orders* of events, and that a single sense-datum is by no means the same sort of an event as the liquefaction of a piece of wax or the movement of a ball. The liquefaction or the movement are, according to him, constructs¹ or complexes, each displaying a family-like structure (for each is a phase in the history of a family) and each therefore consisting of an infinite multitude of actual and obtainable sense-data ordered in a certain way: whereas a sense-datum is not a construct, and has no family structure, but is an individual particular. It is between events of the complex or 'constructional' order that causal relations hold; these alone can be called effects.² Thus, according to Phenomenalism, even the suggestion that sense-data might be causally dependent on material things (whether directly on brains or remotely on 'sources' outside the brain) rests upon a sort of confusion of categories: an individual sense-datum, for instance this red patch, is not the sort of entity which would conceivably be causally dependent on anything material.

But might not a Phenomenalist hold that they are dependent on *minds*? Not if by 'mind' one means something which is capable of standing in causal relations with matter, and particularly with a brain. For how could a mind be *affected* by something which is itself a construct of mind-dependent events? Now the only arguments which there are for supposing sense-data to be either mental or mind-dependent events presuppose that a mind is something which can be affected by a brain. They presuppose that the mind has been stimulated by a cerebral process, and then proceed to show that it adds a further contribution of its own: for instance, in partial hallucinations. Some or even all of the

¹ I may perhaps remind the reader that a construct is not something manufactured by some one's intelligence; but simply a complex defined in terms of certain intuited particulars having certain specified relations between them. Cf. p. 286, above.

² A sense-field, it is true, is a complex, but it again is not the same sort of complex as the movement of a piece of matter is. The relations by which its parts are related are not those of 'confamiliarity'.

qualities of the sense-datum are on occasion due to our expectations or fears, and again the 'pattern' of the normal sense-field depends partly on our perceptual dispositions. But we only think that the mind is responsible for these, because we are sure that there is much else for which it is *not* responsible: we attribute to its agency only the residuum for which we can find no physiological correlate. To say that sense-data are *exclusively* mind dependent is to take away the evidence on which their partial mind-dependence¹ is established.

If we go further and say that sense-data actually are mental states, the objection is still plainer. The only reason for saying so, is that the mind is the *last* member of the causal series source-medium-organ-brain. . . . Thus the suggestion presupposes that the mind is affected by the brain. But there is no sense in saying that a thing is affected by a selection of its own actual and possible states (for that is what the brain would be on this hypothesis).

No doubt a man might maintain that sense-data are states of the mind, and yet not mean by a mind something capable of standing in causal relation with a brain.¹ But if so, they are not mental states in the ordinary sense of the words, and to call them 'mental' is simply a piece of non-significant mystification, only excusable in those who think that everything that is not material must be mental.

Thus a Phenomenalist will have to assent to the theory that sense-data are neither mental nor physical, but not for the usual reason. His reason is that on his view every *material* event is a complex construct of sense-data, and therefore a single sense-datum cannot be a material event; and that the only sort of *mental* event which could conceivably display sensuous qualities is one which is causally dependent upon a material event, i.e. upon something which itself already consists of sense-data. Thus on his view the sense-given manifold has 'no place in Nature'; but the reason is that Nature (so to speak) only has a 'place' in *it*.

To conclude: a Phenomenalist must hold that sense-data are not caused at all, and that they are not even events in the ordinary sense of the word. According to him, we must simply take the sense-given continuum as a going concern. There it is, and all statements in which material things and events

¹ Strictly speaking, we ought to say the partial mind-dependence of all (in respect of pattern, etc.) and the total mind-dependence of a few, viz. completely hallucinatory data.

are mentioned are ultimately statements about it—about the manner in which it does or could develop itself, whether now or in the past or in the future. We cannot ask *why* it is there, for all 'whys' presuppose that it is there already, and have meaning only within it. And the empirical facts, on this interpretation of them, show only that whenever one part of the continuum develops itself in a 'subjectively successive' way, other parts develop themselves in 'objectively successive' ways. This is not a causal law, for neither a subjectively successive series of sense-data, nor the individual sense-data composing it, is the sort of thing to which causal laws apply: by definition nothing *happens* to a family when a subjective succession takes place. It is simply a generalization about the basic structure or mode of organization of the sensory continuum.¹

Such is the phenomenalist interpretation of the facts which are thought to establish the existence of vertical causality. And it has important lessons for us, although we have rejected Phenomenalism. For although a material thing, e.g. a table, is not simply a family of sense-data, it does contain one: as we have seen, it is a complex whole which consists of a physical occupant and a family in conjunction.

With this in mind, let us reconsider the statement that sense-data are causally dependent upon the organism of the sentient. Obviously all depends on what is meant here by 'organism'. If one means simply the *physical occupant* of a certain region, defined by certain causal characteristics, there is nothing absurd in the statement and indeed it is almost certainly true. But if one means the physical occupant together with the family of sense-data which occupies the same place, then the statement involves a paralogism. For then we should be saying that the organism *consists* in part of certain entities which are causally dependent on the organism. But obviously A cannot

¹ The proposition that 'every totum datum is somato-centric' (cf. p. 38, above) is simply a restricted form of this generalization. Perhaps I may remind the reader that this does not affect the *publicity* of the material world in the least. My sensory continuum always develops itself in this 'two-sided' way, and your sensory continuum develops itself in a similar way. But this does not prevent sense-data in mine from being *confamiliar* with sense-data in yours. And nothing prevents *xy* somatic data from being *confamiliar* with some of your environmental ones, and *vice versa*. A Phenomenalist has no more reason to be a solipsist than anybody else.

be causally dependent on AB; else AB must exist before A does, and so A must exist before it does exist.

Likewise with regard to the 'source', say, the table. If you mean by 'the table' simply the physical occupant of a certain place, then it may well be that the table is the remote cause of the sense-data composing the family which is coincident with it. But if we mean not only this, but (as we usually do) the 'complete thing' into which the sense-data actually enter as ingredients, the statement that it is the source of the sense-data again involves us in the absurdity of saying that A depends for its existence on AB of which it is itself a part.

Thus with regard to 'complete things' something very like the phenomenalist view is right. We must not say that the sense-data are causally dependent on the complete organism, which is what most people at most times mean by the term 'organism': all we can say is that changes in the complete organism condition subjective (extrinsic) successions in other complete things, say, in the complete table. Likewise the state of the total table is a remote condition not of the *existence* of the table-data but of *subjective successions* of them, that is, of subjective successions in the sensory portion of itself. In short, the world of complete things (which is what we ordinarily mean by 'the world' or 'Nature') is something which by definition *includes* sense-data within it: therefore sense-data cannot possibly be dependent on any complete thing or set of them. And it is also true that an individual sense-datum, though it is an event, is not an 'event in' that world, if we take this phrase in its ordinary meaning: it happens *nowhere* and *to nothing*—it is simply an event of a different order. The characteristic of being an event in Nature, like the characteristic of having a spatial position in it, is a *collective* characteristic which no individual sense-datum can possess, but only certain sorts of complexes of which sense-data are constituents.¹

On the other hand, sense-data are causally dependent on the states and the changes of *physical occupants* together with those of such minds as stand in causal relations with physical occupants. Thus if we represent the complete thing by AB

¹ We have seen already that with regard to the spatial system in which material things are located an individual sense-datum taken alone is nowhere; although it may well happen to be a constituent of something which is somewhere, and of course (if it is an 'expanded' sense-datum at all) it is necessarily somewhere in its own sense-field. Cf. p. 351, above.

as before, A being the physical occupant and B the family, we can say that B is remotely dependent not indeed upon AB, but upon A. The physical occupant is the 'source' of the sense-data coincident with it: the complete thing is not their source, but it does *include* their source as well as them. And this is what we mean by asserting the existence of vertical causality as well as horizontal.

Yet we must hasten to add that if a sense-datum is not an 'event in' the world of complete things, still less is it an 'event in' the system of physical occupants. The only events in *that* system are changes of shape or size or position or causal characteristics.¹ Now a sense-datum is certainly not that. And as we saw in an earlier chapter, it is not a psychical event either, as thinking and willing are, nor again as changing one's character is. We have therefore to agree with the Phenomenalists that a sense-datum is an event of a unique order. It does not occur *in* anything, neither in a purely physical entity, nor in a complete thing, nor in a mind (or soul). And although if non-hallucinatory it is what may be called a basic constituent of 'total' Nature, i.e. of the world of complete things, yet it has no *place* in Nature. (Likewise with regard to subjective successions, substituting 'process' for event.) And it is also true that the laws with regard to the occurrence of sense-data are not merely different from ordinary causal laws—as the laws of magnetism differ from those of physiology—but are laws of a different order.

Thus if there were no physical occupants there would be no sense-data. The sensuous part of Total Nature does depend upon the physical part. Yet, on the other hand, if there had been no complete things, we could have had no beliefs about physical occupants, and could not even have conceived of physical occupancy. For we can only *define* a given type of physical occupant by reference to the kind of family which it is coincident with, and the kind of foreign families whose mode of prolongation it influences. And we can only *describe* an individual physical occupant, e.g. a certain magnet, by reference to the *particular* family which is coincident with it. Nor is it only the system of physical occupants which is public and independent of minds. Individual sense-data are private and dependent each on a certain mind, but as we have seen

¹ In the end all these reduce to the last: when a physical occupant moves, that simply means that certain causal characteristics are otherwise manifested than they were before.

families of sense-data are not : therefore the world of complete things also is public and independent of minds. It is discovered, not made, by minds (whatever 'making' may mean), though to be sure it is not discovered by sense alone. It is the object of perceptual assurance ; and if this mode of consciousness is not acquaintance or demonstration, still it is quite good enough, for the confirmation process upon which it is based can be continued *ad libitum*. In short, the world of 'complete' things is as real as any Realist could desire. And it is the only sort of world which is of any interest to us. For of the intrinsic qualities of physical occupants, apart from their relations to sense-data, we have no knowledge at all, and no prospect of getting any.

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